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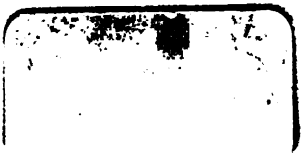

FINAL REPORT

OF THE

INDUSTRIAL COMMISSION.

PREPARED IN ACCORDANCE WITH AN ACT OF CONGRESS
APPROVED JUNE 18, 1898.

VOLUME XIX

OF THE COMMISSION'S REPORTS.

UNIVERSITY

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1902.

MEMBERS OF THE INDUSTRIAL COMMISSION.

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Mr. D. A. TOMPKINS.

E. DANA DURAND, *Secretary.*

Several changes occurred in the Commission during its term. In June, 1899, Mr. S. N. D. North resigned and was succeeded by Mr. Albert Clarke. In May, 1900, Mr. M. D. Ratchford resigned and was succeeded by Mr. Charles H. Litchman. In August, 1900, Mr. Ellison A. Smythe resigned and was succeeded by Mr. D. A. Tompkins. In May, 1900, Senator Lee Mantle resigned and was succeeded by Senator Thomas R. Bard. In July, 1901, Senator James H. Kyle died and no successor was appointed. He was chairman of the Commission, and in September, 1901, Mr. Albert Clarke was elected to the vacancy.

93465

LIST OF VOLUMES OF THE INDUSTRIAL COMMISSION.

[For full titles and contents of volumes, see p. 1135.]

I. Trusts and Industrial Combinations.
II. Trust and Corporation Laws.
III. Prison Labor.
IV. Transportation.
V. Labor Legislation.
VI. Distribution of Farm Products.
VII. Capital and Labor in Manufactures and General Business.
VIII. Chicago Labor Disputes.
IX. Transportation (Second Volume).
X. Agriculture and Agricultural Labor.
XI. Agriculture and Taxation.
XII. Capital and Labor in the Mining Industries.
XIII. Trusts and Industrial Combinations (Second Volume).
XIV. Capital and Labor in Manufactures and General Business (Second Volume).
XV. Immigration and Education.
XVI. Foreign Labor Legislation.
XVII. Labor Organizations, Labor Disputes, and Arbitration. Railway Labor.
XVIII. Industrial Combinations in Europe.
XIX. Final Report of the Industrial Commission.

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ACT CREATING THE COMMISSION.

[ACTS OF 1898, PUBLIC—No. 146.]

AN ACT authorizing the appointment of a nonpartisan commission to collate information and to consider and recommend legislation to meet the problems presented by labor, agriculture, and capital.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That a commission is hereby created, to be called the "Industrial Commission," to be composed as follows: Five members of the Senate, to be appointed by the presiding officer thereof; five members of the House of Representatives, to be appointed by the Speaker, and nine other persons, who shall fairly represent the different industries and employments, to be appointed by the President, by and with the advice and consent of the Senate.

SEC. 2. That it shall be the duty of this commission to investigate questions pertaining to immigration, to labor, to agriculture, to manufacturing, and to business, and to report to Congress and to suggest such legislation as it may deem best upon these subjects.

SEC. 3. That it shall furnish such information and suggest such laws as may be made a basis for uniform legislation by the various States of the Union, in order to harmonize conflicting interests and to be equitable to the laborer, the employer, the producer, and the consumer.

SEC. 4. That the commission shall give reasonable time for hearings, if deemed necessary, and if necessary it may appoint a subcommission or subcommissions of its own members to make investigation in any part of the United States, and it shall be allowed actual necessary expenses for the same. It shall have the authority to send for persons and papers and to administer oaths and affirmations. All necessary expenses, including clerks, stenographers, messengers, rent for place of meeting, and printing and stationery, shall be paid from any money in the Treasury not otherwise appropriated; however, not to exceed fifty thousand dollars per annum for expenditures under this section.

SEC. 5. That it may report from time to time to the Congress of the United States, and shall at the conclusion of its labors submit a final report.

SEC. 6. That the term of the commission shall be two years.[1] The salary of each member of this Commission appointed by the President shall be three thousand six hundred dollars per annum. Each member of the Commission shall be allowed actual traveling expenses.

SEC. 7. That any vacancies occurring in the Commission by reason of death, disability, or from any other cause shall be filled by appointment by the officer and in the same manner as was the member whose retirement from the Commission creates the vacancy. That in case the term of a Senator or Representative expires while a member of this Commission, said Senator or Representative shall not thereby cease to be a member of said Commission, but shall serve until the expiration of the term for which he was appointed, drawing pay from the time his term as Senator or Representative expires, at the same salary as those members of the Commission appointed by the President of the United States.

SEC. 8. That a sum sufficient to carry out the provisions of this act is hereby appropriated out of any money in the Treasury of the United States not otherwise appropriated.

Approved, June 18, 1898.

[1] The term was afterwards extended to February 15, 1902.

EXPERTS EMPLOYED BY THE COMMISSION.

ROBERT CHRISTY,
Warehouse and grain inspection laws.

MISS KATE HOLLADAY CLAGHORN,
Immigration and general statistics.

GEORGE CLAPPERTON,
Taxation of corporations.

JOHN R. COMMONS,
Immigration; labor questions.

JOHN F. CROWELL,
Agriculture and distribution of agricultural products.

J. R. DODGE,
Agricultural labor.

E. DANA DURAND,
Strikes and arbitration; supervisor of digesting and indexing.

CHARLES E. EDGERTON,
Labor organizations; general digesting and indexing.

HARVEY M. FRIEND,
Speculation in agricultural products; general digesting and indexing.

J. M. HINES,
Pure food legislation.

J. W. JENKS,
Trusts and industrial combinations.

EMORY R. JOHNSON,
Transportation (for a brief period).

MISS GAIL LAUGHLIN,
Domestic service; general digesting and indexing.

SAMUEL M. LINDSAY,
Railroad labor.

ROSWELL C. MCREA,
Taxation of transportation corporations.

B. F. MEYER,
Railroad legislation

VICTOR H. OLMSTED,
Prison labor.

E. W. PARKER,
Mining industry

WILLIAM Z. RIPLEY,
Transportation.

E. W. SAUNDERS,
Tobacco industry.

WILLIAM M. STEUART,
Prison labor.

F. J. STIMSON,
Advisory counsel to the Commission; labor legislation.

ROBERT H. THURSTON,
Mechanical progress in industry.

THOMAS F. TURNER,
Asiatic labor on the Pacific coast.

MAX WEST,
Taxation and agriculture; general digesting and indexing.

ROBERT H. WHITTEN,
Expert indexer.

EUGENE WILLISON,
Mine labor legislation.

LETTER OF TRANSMITTAL.

INDUSTRIAL COMMISSION,
Washington, D. C., February 10, 1902.

To the Fifty-seventh Congress:

In behalf of the Industrial Commission, I have the honor to submit herewith its Final Report. This is Volume XIX and is devoted to historical reviews of the subjects of our inquiries, and to recommendations for legislation, with appendixes relating thereto.

It presents a substantially complete epitome of the industrial life of the nation and of the important changes in business methods which have taken place in recent years, with a discussion of some of the economic problems which confront the people.

It may not be inappropriate to call attention to certain features of our reports, which we hope will make them convenient to members of Congress and to legislators in the several States, and also to economists and business men throughout the country.

In the first place, it was the aim of the Commission to select only the most competent witnesses, although, of course, there were, in the nearly seven hundred examined, a few who sought to be heard, and some of them, perhaps, for personal as well as public reasons. As a rule, however, the evidence is that of the chief men in business or the heads of business departments, public officials, leaders of organized labor, and experts who have given the subjects exhaustive study.

Having obtained such instructive testimony, it was the next purpose of the Commission to present it in accessible and attractive form. Therefore, each of the volumes of testimony opens with a narrative review of its substance. This is followed by a digest of the evidence, usually about one-fourth the length of the evidence itself, arranged under topical heads and giving reference to the pages of the testimony and cross references to other evidence or authorities on the same subject. In addition, each volume contains an index of the digest and an index of the testimony, prepared in accordance with the latest and best approved library rules, while the final volume contains an index of its contents and a general index for all the volumes, by means of which quick and sure guidance can be had to all the information presented. Some of these features are unique in government reports and have been highly commended by economists at home and abroad.

Besides taking testimony, the commission has availed itself of much other authentic information, gathered chiefly from official documents of the Nation and the States, from the decisions of courts, and from the researches of experts. Thus a person who seeks knowledge as to the history and latest status of any of the subjects covered can find it in condensed but accurate terms in these volumes, without taking the trouble to find and read the many publications from which it has been gleaned. In view of the size of the country and the voluminous nature of the legislation and reports of its forty-five States, and of the many organizations which represent industrial progress, this compendium should prove of service to busy men.

Any reader of the reviews in this final volume can not but be impressed with the immensity and complexity of the industrial life of the nation, and with the fact that nearly all kinds of business have undergone almost revolutionary changes in recent years. It would now seem impossible to legislate wisely or to conduct business prudently without obtaining knowledge of these new conditions. It is not presumptuous to say that most students of these reports will find many revelations of business methods and complications of which they knew little before, and will have a liberal education in the economic problems of the day.

Possibly a word will be pardoned in reference to the publication and distribution of the volumes. For some months past the demand for them from all over the country and from foreign countries has been so great that regrets are expressed that larger editions were not printed. Doubtless Senators and Representatives have generally sent their allotments to libraries, which will serve the public fairly well so far as all but the final volume are concerned; but as this volume is substantially complete of itself, and embraces summaries and conclusions drawn from its predecessors, probably the publication of a very large edition for a much more general and popular distribution would prove to be a profitable and commendable use of public funds.

The Commission regrets that lack of time prevented it from taking testimony in the States on the Pacific coast, now such an important part of the country, and from investigating many branches of industry and some of the newest combinations in sections which it partially covered. It especially regrets its inability to complete an investigation of telegraph systems and proposed Government ownership, and of the American merchant marine in the foreign trade. The country has become so vast, and its industries so varied and changeable, that a bureau in a permanent department of the Government would have all it could do to keep trace of the mutations of business—a subject which is quite apart from the scientific and statistical work now well performed by other bureaus and departments.

The Commission acknowledges with gratitude courtesies received from officials in various departments of the Government and in many of the States, and takes pleasure in testifying to the fidelity of its entire corps of assistants, especially to the valuable aid rendered by most of its expert agents, particularly by its accomplished secretary, Mr. Edward Dana Durand, and by Messrs. F. J. Stimson, J. W. Jenks, William Z. Ripley, John Franklin Crowell, John R. Commons, Max West, and Charles E. Edgerton.

In conclusion, it should be said that the duty which the law devolved upon the Commission, to recommend legislation, has been performed with becoming modesty and without a thought that importance will be attached to its suggestions, except so far as they are the results of a careful study of the subjects. The signatures of Commissioners apply to the recommendations only, and no Commissioner who has signed is necessarily committed to the statements, reasoning, or language of the several reviews which precede the recommendations. It is believed that the conclusions as a whole are based upon a fair balance of evidence, and it is hoped that they will be of service to members of Congress and legislatures in shaping laws to the many new conditions which these reports present.

Respectfully submitted.

ALBERT CLARKE, *Chairman.*

PROGRESS OF THE NATION.

POPULATION.

Since industry depends as much upon the working force available for carrying it on as upon any other one factor, the question of population—its amount, kinds, and distribution—is of fundamental importance in any survey of general industrial conditions.

The elements of population now dominant on the North American Continent—whites of European origin and the blacks whom they brought in as a laboring force—having entered the country along the Atlantic seaboard and pressed steadily westward, formed along their line of advance a frontier of settlement which has been a feature of peculiar importance in American industrial history. As long as this frontier existed an outlet was afforded for surplus labor, an opportunity was offered for enterprise and invention, and, finally, the peculiar social and moral conditions prevailing in frontier life had an effect on the general social life of the whole country.

A frontier of settlement may be said to have existed up to and including the census year 1880. Since that time the unsettled area has been so broken into by isolated bodies of settlement that there is no longer a frontier line,[1] and a new period of industrial history is opened.

The areas of unsettled country still remaining are mainly (1) mountainous regions unsuited to agriculture or inaccessible to markets; (2) swamp and lake regions; (3) timber lands, and (4) arid lands.

In this western advance population has increased at a more rapid rate than the settled area, as shown in the accompanying table:

Increase of population and settled area.[2]

Decades.	Increase, per cent.		Decades.	Increase, per cent.	
	Settled area.	Population.		Settled area.	Population.
1790–1800	27.41	35.10	1850–1860	22.01	35.58
1800–1810	33.44	36.38	1860–1870	6.49	22.63
1810–1820	24.70	33.07	1870–1880	23.37	30.08
1820–1830	24.38	33.55	1880–1890	24.06	24.86
1830–1840	27.59	32.67	1890–1900	.....	20.70
1840–1850	21.30	35.87			

[1] Eleventh Census, Population, I, p. xxxiv.
[2] Eleventh Census, Population, I, p. xxxii, and Twelfth Census, Bulletin No. 64, p. 3.

This has shown itself in a generally progressive increase of density of population, not merely for the settled area, but for the country as a whole, from decade to decade, as is seen by the following table:

Density of population at each census.[1]

[Number of inhabitants per square mile, land surface only, of States and Territories at each census.]

Geographical divisions.	1790.	1800.	1810.	1820.	1830.	1840.	1850.	1860.	1870.	1880.	1890.	1900.
United States.....	4.89	6.61	8.69	4.91	6.35	8.43	7.93	10.84	13.30	17.29	21.31	25.7
North Atlantic[2]..	12.14	16.26	21.51	26.88	34.20	41.72	53.23	65.37	75.89	85.92	107.37	129.8
North Central[3]....	.....	.20	.89	1.14	2.14	4.45	7.17	12.07	17.28	23.04	29.68	34.95
South Atlantic[4]..	8.64	10.66	12.48	14.28	13.57	14.61	17.42	19.97	21.79	28.28	32.98	38.88
South Central[5]...	.63	1.94	2.30	3.97	5.93	8.69	7.05	10.68	11.91	16.51	18.94	23.07
Western[6].....	.....	.....	.....	.....	.....	.....	.16	.53	.84	1.50	2.58	3.48

[1] Eleventh Census, Population, I, p xxxv, and Twelfth Census, Bulletin No. 64, pp. 8–9.
[2] Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania.
[3] Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas.
[4] Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida.
[5] Kentucky, Tennessee, Alabama, Mississippi, Louisiana, Texas, Oklahoma, Arkansas, Indian Territory.
[6] Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Idaho, Washington, Oregon, California.

Exceptions are to be noted between 1800 and 1810, when the density of population for the whole country was reduced nearly one-half through the addition of territory acquired by the Louisiana purchase in 1803; between 1820 and 1830 for the South Atlantic States by the addition of Florida, and between 1840 and 1850 for the South Central States by the addition of Texas and the Mexican territories.

The respective rates of increase of population in the grand divisions, decade after decade, show the rate of progress of the frontier. The table below shows that in the decade 1790–1800 the greatest increase was in the South Central States; in the same decade the North and South[1] Atlantic States show the highest rate of increase reached by them in any decade since the first census, while in the present North Central and Western States there was too small a population to be recorded. Between 1800 and 1810 the country as a whole showed its highest rate of increase, as also did the North Central States, which showed, besides, the highest rate of increase of any of the grand divisions.

For the next four decades the North Central States continued to show the highest rate of increase of any of the grand divisions, at the close of which period, by 1860, the highest rate of increase was shifted to the Western States, where it has since remained. The rate of increase for this division for the last decade (1890–1900), however, although still the largest for any grand division, is so much lower (less than one-half) than that for the preceding decade as to indicate how little new territory has been opened up, while a slight increase in the rates

[1] If the error of enumeration in the census of 1870 is taken into account.

for the South Atlantic and South Central States shows in what directions part of the current formerly running to the West has been diverted.

Increase of population by decades.[1]

Geographical divisions.	1790–1800.	1800–1810.	1810–1820.	1820–1830.	1830–1840.	1840–1850.	1850–1860.	1860–1870.	1870–1880.	1880–1890.	1890–1900.
United States..	35.10	[2] 36.38	33.07	33.55	32.67	35.87	35.58	22.63	30.08	24.86	20.7
North Atlantic	[3] 33.92	32.29	24.95	27.22	21.99	27.60	22.81	16.09	17.96	19.95	20.9
North Central .	.....	[23] 474.77	[2] 192.99	[2] 87.49	[2] 108.11	[2] 61.23	68.35	42.70	33.76	28.78	17.6
South Atlantic	[3] 23.47	16.99	14.43	19.11	7.67	19.20	14.65	[4] 9.11	[4] 29.79	16.59	17.9
South Central .	[23] 206.68	134.09	72.89	51.91	46.72	42.24	34.05	11.54	33.62	23.02	24.6
Western	.....	.....	.....	.....	.....	.....	[23] 246.15	[2] 60.02	[2] 78.46	[2] 71.27	[2] 32.8

[1] Eleventh Census, Population I, p. xiii, and Twelfth Census, Bulletin No. 64, p. 8.
[2] Highest rate of increase in the decade for any division.
[3] Highest rate of increase in the division for any decade.
[4] Error in enumeration. True rates are, 1860–70, 21.94; 1870–80, 21.96.

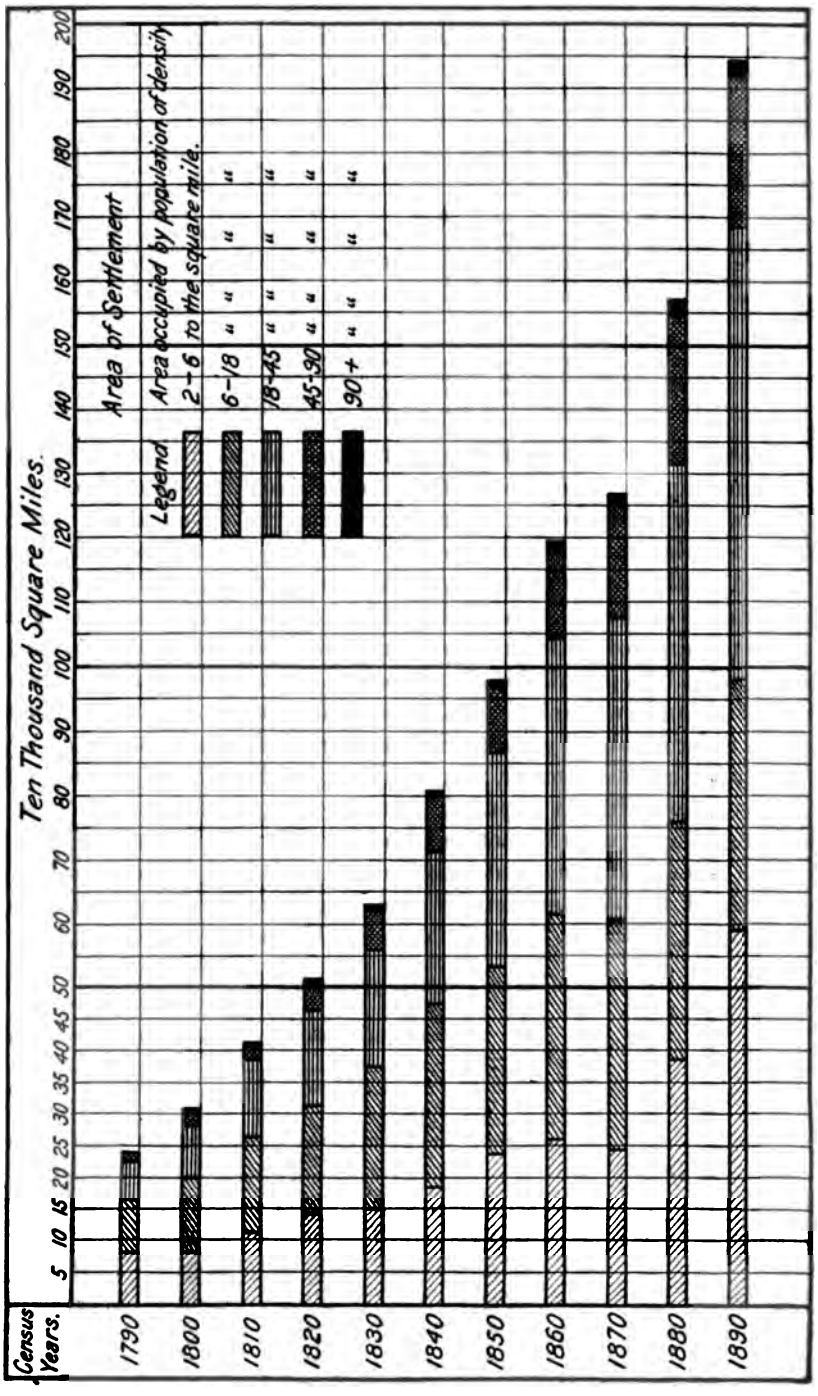
Each different degree of density of population has its particular industrial meaning. In this country a population density of 2 to 6 to the square mile indicates a low stage of industrial development in which settled agriculture has not arisen. At this stage the community is supported by the grazing industry, mining, or timber cutting, without any cultivation of the soil. A density of 6 to 18 to the square mile indicates the beginnings of settled agriculture, while a well-developed agriculture is signified by a population density of 18 to 45. The growth of manufacturing and mechanical industries and of trade and transportation tends to bring about greater concentration of population, not only in industrial centers proper, but in the agricultural regions supplying these centers where a population density ranging from 45 to 90 to the square mile, or even higher, may be found.[1]

The growth of the country industrially, then, may be traced in the growth of the various density groups occupying the whole area of settlement, as shown in the following table and chart:

Distribution of density groups in settled area.[2]

Census years.	Total area of settlement, 2 or more to the square mile.	Density of population (excluding cities of 8,000 inhabitants and over).				
		Group 1.	Group 2.	Group 3.	Group 4.	Group 5.
		2–6 to the square mile.	6–18 to the square mile.	18–45 to the square mile.	45–90 to the square mile.	90+.
1790	239,985	83,436	83,346	59,282	13,051	820
1800	305,708	81,010	123,267	82,504	17,734	1,193
1810	407,945	116,269	154,419	108,155	27,499	1,243
1820	508,717	140,827	177,158	150,390	39,004	1,343
1830	632,717	150,460	225,894	186,508	65,446	3,414
1840	807,292	183,607	291,819	241,587	84,451	5,828
1850	979,249	233,697	294,698	338,796	100,794	11,264
1860	1,194,754	260,866	353,341	431,601	134,722	14,224
1870	1,272,239	245,897	363,475	470,529	174,036	18,302
1880	1,569,565	384,820	373,890	554,300	231,410	25,145
1890	1,947,280	592,087	398,943	701,845	235,148	24,307

[1] This general division is made in the Eleventh Census, Population, I, p. xxx.
[2] Eleventh Census, Population, I, p. xxxi.



Distribution of density groups in settled area.

Taking the groups separately it is seen that at the first census period practically two-thirds of the settled area, exclusive of the area occupied by cities of 8,000 and over, was occupied by the two showing the lowest grades of density and the least developed conditions of agriculture. From 1800 to 1840 the relative importance of these two groups slowly diminished while the absolute numbers of square miles occupied by them increased rapidly as new territory was opened up decade after decade. From 1850 on, while groups 1 and 2 continued to grow (with the exception of a slight decline of group 1 in 1870) the largest portion of the settled area occupied by any single group has been taken up by that showing a density of 18 to 45 to the square mile, thus indicating the greater prevalence in later decades of a more highly developed agriculture.

Groups 4 and 5, showing the influence of manufactures and commerce are of slight relative and absolute importance in the earlier census periods, but show a general increase, both absolutely and relatively, until in 1890 group 4 occupied 12 per cent and group 5 1¼ per cent of the entire settled area.

The distribution of density groups throughout the grand divisions in 1890 shows the stages of development reached in the different parts of the country by that time.

Distribution of density of population, 1890.[1]

Geographical divisions.	Group 1.	Group 2.	Group 3.	Group 4.	Group 5.
United States	30.40	20.23	36.04	12.08	1.25
North Atlantic	7.51	6.45	29.18	[2][3]44.21	[3]12.66
North Central	18.78	22.74	[2]42.435	15.64	.41
South Atlantic	7.77	21.76	[2][3]56.35	13.76	.35
South Central	15.69	[3]24.84	[3]52.14	7.21	.21
Western	[2][3]80.02	16.34	3.63	.....	.01

[1] Computed from Table Eleventh Census, Population, I, p. xxxiii.
[2] Group showing highest proportion in given division.
[3] Division showing highest proportion of given group.

The above table shows that of the settled area of the North Atlantic States, not including cities, nearly one-half was occupied by the population group of a density of 45 to 90 to the square mile, an indication of the influence of manufactures, and one-eighth is occupied by the group of the highest degree of density. In the North Central States the greater portion, nearly one-half, was occupied by the population group (18 to 45 to the square mile) showing developed agriculture not connected with industrial centers. The South Atlantic and South Central States also show a preponderance of this group, over one-half in each case of the settled area being so occupied, while in the Western States four-fifths of the settled area is still confined to the first population group, having a density of 2 to 6 to the square mile.

URBAN AND RURAL POPULATION.

A special feature of the increase of general density is the growth of a distinctively urban, as distinguished from a rural, population. The

growth of trade and commerce is directly accompanied by the growth of cities; the growth of manufactures is not necessarily but usually so accompanied. From 1790 to the census year 1900 there has been a steady increase in the number of cities with a population of 8,000 and over and in the proportion of the population living in them, only one-thirtieth of the population being found in such cities in the former year, while one-third were so found in the latter year as is seen by the following table:

Per cent of total population in cities of 8,000 or over.[1]

Census years.	Number of cities.	Per cent urban of total.	Census years.	Number of cities.	Per cent urban of total.
1790	6	3.4	1850	85	12.5
1800	6	4.0	1860	141	16.1
1810	11	4.9	1870	226	20.9
1820	13	4.9	1880	286	22.6
1830	26	6.7	1890	447	29.2
1840	44	8.5	1900	545	33.1

[1] Twelfth Census, Bulletin No. 70, p. 3.

The same industrial diversity in the grand divisions that was indicated by the diversity of distribution of population groups is shown in the differences of percentage of their populations, respectively, found in cities. The following table shows three differences for 1880, 1890 and 1900. It will here be seen that all divisions show an increase between 1880 and 1900 in the percentage of the population living in cities, but in unequal degree. In the North Atlantic States the urban population, already in 1880 nearly half of the entire population, increased to only a little over half by 1900. In the North Central States the proportion, about one-sixth in 1880, rose to nearly one-third in 1900. In the South Atlantic States the proportion rose from one-eighth to one-sixth, while in the South Central States the proportion rose from one-thirteenth to a little over one-tenth.

Urban population (places 8,000 or over) 1880, 1890, 1900.[1]

Geographical divisions.	1880.		1890.		1900.	
	Numbers of cities.	Per cent of total population in cities.	Numbers of cities.	Per cent of total population in cities.	Numbers of cities.	Per cent of total population in cities.
United States	286	22.6	448	29.2	546	32.9
North Atlantic	137	43.1	199	51.8	231	58.6
North Central	95	17.4	152	25.9	192	30.6
South Atlantic	23	12.4	36	16.0	43	17.0
South Central	20	7.5	37	10.4	49	11.1
Western	11	24.0	24	30.0	30	31.2
Hawaii	.....	.....	.....	.....	1	25.5

[1] Eleventh Census, Population I, p. lxviii, and Twelfth Census, Bulletin No. 70, p. 2.

The Western States, considering their low degree of general density, show a strikingly high proportion of the population living in cities, 24 per cent in 1880 and 31 per cent in 1890. This growth of a strictly urban population, while general density remains in the grade characteristic of a low degree of industrial development, is accounted for by the peculiar nature of the industries carried on in these States. Grazing and mining do not require and, indeed, will not support dense populations throughout the general area where they prevail, but they do require centers of trade to dispose of the product and to supply the wants of the workers.

The rate of increase of urban population for the last three decades has varied for different parts of the country, and, as indicated by the growing percentage of urban population in all parts, has far outstripped the rate of rural increase.

Between 1890 and 1900, however, as will be seen by the table and chart on the following page, while the rate of increase of cities for the whole country was much higher than that of rural districts, the disproportion between the two was not so great as for the period between 1880 and 1890; and, turning to the grand divisions, it is seen that the rate of increase of urban population for the latter decade is much more uniform than for the former for all parts of the country, each showing a rate within a few points of the average for the whole country.

The decrease in rate for the North Atlantic States is seen to be comparatively slight. The large proportionate decrease in rate in the North Central, South Central, and Western States is to be attributed to the collapse of "boom" towns, started in a period of speculation in land values.[1] The slightly smaller decrease in rate for the South Atlantic States is, it has been claimed,[2] due to the fact that the growing manufacturing interests in that part of the country are gathering the population in small rural settlements rather than in cities. It was noted above that while the growth of manufactures was usually accompanied by the growth of urban population, this was not necessarily the case.

Taking the four manufacturing States of the South—Alabama, Georgia, North Carolina, and South Carolina—it is seen that the rates of increase of urban population in two of these States only are approximately up to the level of the rate of increase for the urban population of the South Atlantic States as a whole from 1880 to 1890, while in each case the rate is much lower than the rate for the same State in the preceding decade.

In all four States the groups containing the smallest cities show the highest rates of increase—rates that are absolutely as well as relatively high. In Alabama and Georgia the rate of increase of the largest cities is considerable, and the rate of increase of the medium-sized

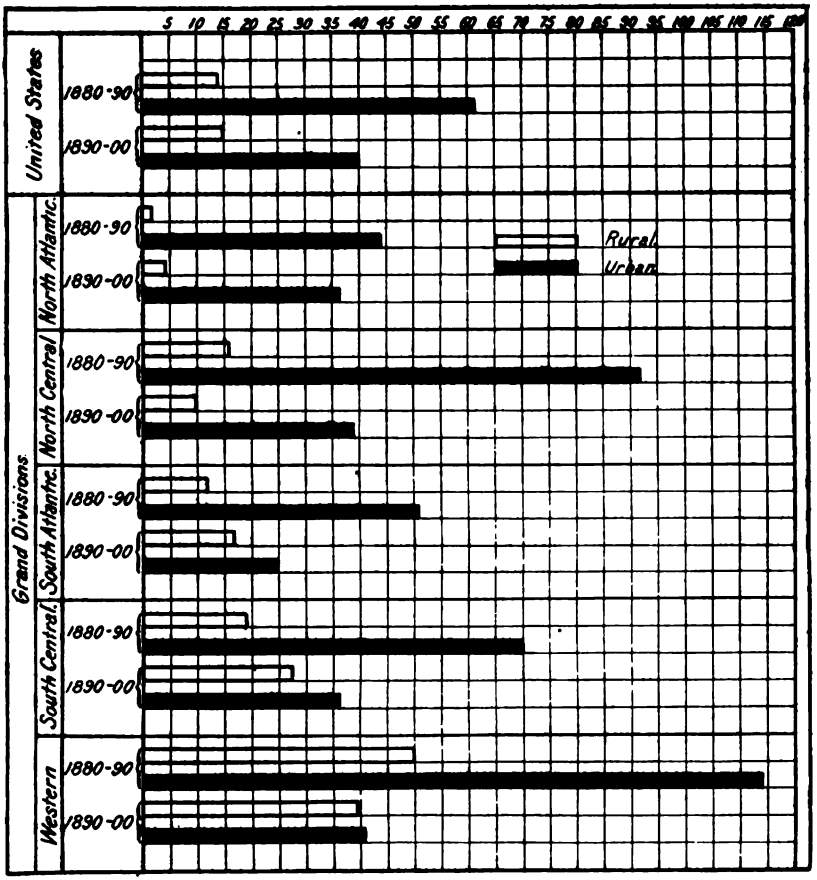
[1] A. F. Weber, "Growth of cities," in Municipal Affairs, June, 1901, p. 370–1.
[2] Ibid.

Percentage of increase, urban and rural population.[1]

Geographical divisions.	Rural.		Urban (cities 8,000 +).	
	1880–90.	1890–1900.	1880–90.	1890–1900.
United States	14.16	15.29	61.54	36.90
North Atlantic	1.61	4.00	44.15	36.89
North Central	15.54	10.32	91.55	39.02
South Atlantic	11.77	16.51	50.68	25.19
South Central	19.16	27.45	70.27	35.76
Western	50.26	39.35	114.33	40.68

[1] Computed from Eleventh Census, Population I, p. lxviii, and Twelfth Census, Bulletin No. 70, p. 2.

Chart showing percentage of increase, urban and rural population.



cities is insignificant, while exactly the reverse is to be noted in North and South Carolina, the increase of the largest cities being unimportant and of the medium group considerable. (See accompanying table.)

Increase of urban population, southern manufacturing States, 1890–1900.[1]

States.	Per cent increase of population.	Per cent increase, urban (4,000 +) population.	Per cent increase of cities 20,000 + in 1890.	Per cent increase of cities 4,000–20,000 in 1890.	Per. cent increase places less than 4,000 in 1890, more than 4,000 in 1900.
Alabama	20.8	47.2	85.50	9.29	22.55
Georgia	20.6	36.3	25.53	11.18	48.98
North Carolina	17.1	56.6	4.58	30.75	164.94
South Carolina	16.4	86	1.55	50.36	70.63

[1] Computed from Twelfth Census, Bulletins Nos. 5, 19, 39, and 46.

SEX AND AGE—FOREIGN AND NATIVE BORN.

The distinctions of sex and age in a population are of industrial as well as of social importance, as adult males make up the bulk of the working force. These are found in excess at times and places where industrial opportunities are being newly developed. In a later stage, when sufficient prosperity is attained to enable the producing class of males to maintain the nonproducing classes of women and children, these latter are added in greater proportion to the population. Hence it is seen that women may even predominate in communities where industrial activity is greatest, leaving quite out of account the women actually engaged in industries; while the same phenomenon is seen in communities where industrial opportunities have become exhausted, the adult males having gone forth to seek other fields. The following table, showing the percentage of males in the whole country and for the grand divisions from 1850 to 1900, indicates the working of some of the causes.

Percentage of males in total population.[1]

Geographical divisions.	1850.	1860.	1870.	1880.	1890.	1900.
United States	51.04	51.16	50.56	50.88	51.21	51.2
North Atlantic	50.30	49.70	49.43	49.36	49.87	50.0
North Central	52.08	52.14	51.72	51.92	51.85	51.6
South Atlantic	50.08	50.09	48.96	49.46	49.88	50
South Central	51.33	51.45	50.12	50.62	50.98	51
Western	78.61	68.10	61.50	60.58	56.70	56

[1] Eleventh Census, Population I, p. lxxii, and Twelfth Census, Bulletin No. 103, p. 17.

By this it is seen that from 1850 to 1880 the proportion of males to females in the North Atlantic States steadily declined, there being a slight excess of males in the former year, a slight excess of females in the latter. Since 1880 the percentage of males has been rising, until in 1900 the percentage when worked out to only three places is exactly equal, denoting for the whole period the general slackening in the current

of westward emigration shown in other tables. There has been a steady decline in the Western States in the percentage of males for all decades since 1850, in which year the percentage had reached the great and abnormal height of 73.61. By 1890 it had dropped to 58.88 per cent, showing a near approach to normal conditions, although these percentages are, even thus, higher than those shown by any other grand division for the same years. The percentages of males in other grand divisions show more varying proportions for the several decades, but a comparison of 1850 with 1900 for each shows a reduction of the percentage of males in each case.

Taking the average for the whole country, however, it is seen that the proportion of males was higher in 1890 than in 1850, and remains at this higher level for 1900. This change is largely due, undoubtedly, to the influence of foreign immigration, both decades (1850–1860 and 1880–1890) of heavy immigration being followed by increased percentages of males in the following census years (1860 and 1890). Foreign immigrants are in large proportion adult males, and the foreign-born population in the United States shows a higher percentage of this class than does the native-born population, as is seen by the accompanying table:

Percentage of males 18–45 years of age of total population of same general nativity, 1890.

	Native white of native parentage.	Native whites of foreign parentage.	Foreign white.
United States	19.72	20.10	29.79
North Atlantic	19.38	20.39	28.72
North Central	20.14	19.31	29.21
South Atlantic	18.46	22.98	25.66
South Central	18.86	21.47	28.82
Western	26.39	22.20	41.23

[1] Computed from Eleventh Census, Population I, pp. 396 and 748.

The foreign population, then, is more predominately a working force than is the native population, and the native whites of foreign parentage than the native whites of native parentage, since the former class is deficient in the higher age periods which indicate a loss of working power.

How much importance is to be given to this preponderance of males among the foreign element of the population is seen only when the numerical strength of this element, in relation to the rest of the population, is considered. It is seen in the following table that in 1890 foreign-born whites made up from 18 to 23 per cent, approximately, of the population in the Northern and Western States; native whites of foreign parentage were about one-quarter of the population in the former group, from 3 to 4 per cent in the latter; while native whites of native parentage were found with fair uniformity for all parts of

the country in the proportion of somewhat over one-half of the population—the proportion held by foreign whites in the North being taken by negroes in the South.

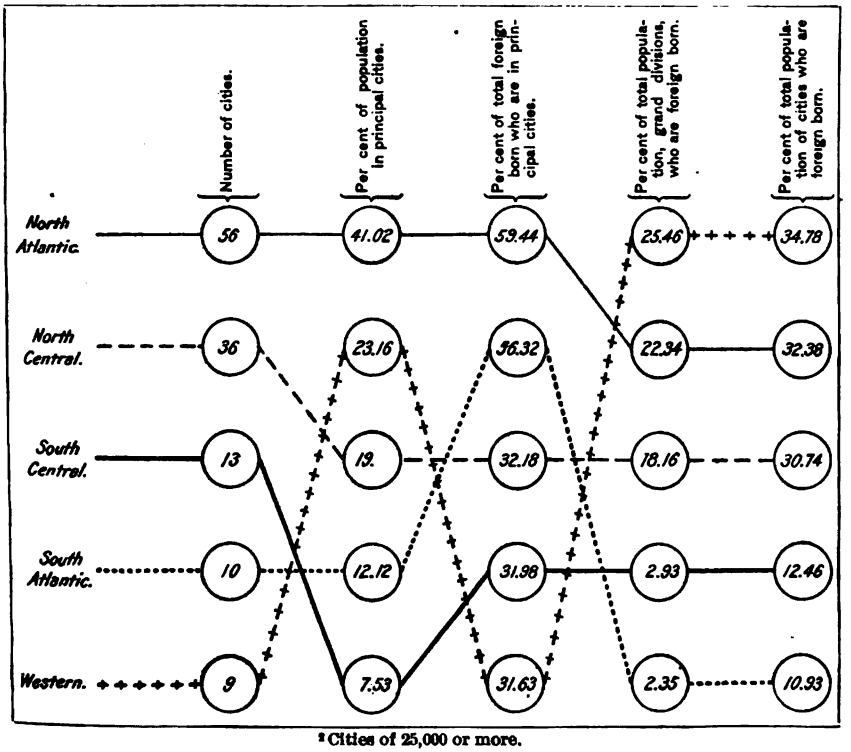
Percentage of nativity elements in general population, 1890.[1]

	Native white, native parentage.	Native white, foreign parentage.	Foreign white.	Negro.	Chinese.	All others.	Total.
United States	54.87	18.37	14.57	11.93	0.17	0.09	100
North Atlantic	51.09	25.08	22.27	1.54	.04	.03	100
North Central	54.78	25.08	18.13	1.93	.01	.07	100
South Atlantic	57.21	3.64	2.28	36.83	.....	.04	100
South Central	60.71	4.62	2.90	31.71	.01	.05	100
Western	49.14	23.45	22.22	.89	3.20	1.10	100

[1] Computed from Eleventh Census, Population I, pp. 395-396.

The distribution of nativity elements considered as a working force is also to be correlated with the distribution of general population into urban and rural. The cities are the great industrial centers; the foreign immigrants, with a preponderence of workers among them, crowd into the cities. The accompanying chart, based upon data given in the Eleventh Census, attempts to show this correlation in a graphic way.

Percentages of urban[2] *and foreign population, 1890, by geographical divisions arranged in order of rank.*



[2] Cities of 25,000 or more.

As is seen by the chart, the North Atlantic States lead in respect to number of cities of 25,000 and over. They also have the largest percentage both of their total population and their foreign population in these principal cities, and only fall below the Western States in high percentage of foreign born in the population both of the division as a whole and the cities.

The North Central States, with 36 cities, have only 19 per cent of the total population and 32.18 per cent of the foreign population in them. This indicates the prevailingly rural character of the section, and also the relatively greater urban tendencies of the foreign born, who are sufficiently numerous in the division to make up 30.74 per cent of the population of the cities and 18.16 per cent of the population of the division as a whole.

The South Central Division, with the next highest number of cities, has the smallest percentage of the total population in cities of any grand division, and next to the smallest percentage of the foreign population. At the same time the absolute numbers of foreigners are so small that they make up only 2.93 per cent of the population of the division and 12.46 per cent of the population of the cities.

The South Atlantic States, with 10 cities, had 12.12 per cent of their total population and 56.32 of their foreign population in them, the latter percentage being very close to the highest shown for any division—that for the North Atlantic States. Here, however, as in the South Central Division, the foreign-born population is small in absolute numbers making up in this division only 2.35 per cent of the population of the division and 10.93 per cent of the population of the cities.

The Western States have the fewest large cities, nine only, but have a larger proportion of the total population in them than any grand division has in its cities, excepting the North Atlantic. At the same time they have the smallest proportion of their foreigners in cities. This proportion, however, is higher than that for the total population, and the number of foreigners is relatively so great in the Western States that they make up 25.46 per cent of the population of the division and 34.78 per cent of the population of the cities.

OCCUPATIONS.

The industrial tendencies that have resulted in gathering population—both native and foreign born—in cities are shown in the distribution of population by occupations for the past thirty years. Data from the Twelfth Census are not yet at hand to show changes since 1890, but up to that year, from 1870, certain broad lines of tendency are to be noted. From 1870 to 1890 was to be observed a steady decline in the proportion of males employed in agriculture to all employed, for the whole country and for each grand division. During the same period there was a moderate general rise in the propor-

tion of males employed in manufacturing and mechanical industries, and a considerable rise in the proportion of those employed in trade and transportation. At the same time there has been a considerable increase in the proportion of males engaged in professional service, from 2.61 per cent so employed in 1870 to 3.36 per cent in 1890.

Data for showing changes in distribution by occupations for the different nativity elements are not at hand for a sufficiently extended period to show tendencies with certainty. But for the short period between 1880 and 1890 it is seen that the proportion of foreign born to all employed has increased in all of the main classes of occupations excepting trade and transportation. It is also seen that the foreign born, like the native born, were tending away from agriculture.

Looking at the tendencies of change by nationalities between the two census periods, it is found that while there was a decrease in the proportion of British, Irish, Germans, Swedes, and Norwegians, and of all others engaged in agriculture, the decrease was greatest for the Swedes and Norwegians, next for the British, next for the Irish, and last for the Germans, of whom 29 per cent were engaged in agriculture in 1880, and 27 per cent in 1890, a decline of only 6 per cent.

In the manufacturing and mechanical industries the proportion of Germans and of Irish to all Germans and Irish employed remained practically the same for the two decades, while the proportion of British and of Swedes and Norwegians had decidedly increased. A moderate general increase in the proportion of those engaged in trade and transportation is observed for all nationalities, while the proportion engaged in professional services remains fairly constant.

VOLUME OF PRODUCTION.

The industrial progress of the nation may be seen in the remarkable growth of industries which has taken place in recent years. This growth is shown in graphic form in the accompanying charts of volume of production of leading staples and the volume of traffic by railroad and steamship. These charts were drafted from tables compiled on the basis of the average production for the years 1879 to 1888—a period of ten years following the resumption of specie payments, and representing, therefore, a turning point in the industrial history of the country. Taking the average volume of production of these ten years as a basis, and computing the annual production as a percentage of this basis, the relative growth of the several products can be seen in comparison.

METALS AND MINERALS.

On this basis by far the greatest increase has occurred in the production of copper.[1] The production of this metal in 1900 is shown by

[1] See Appendix I, chart 1.

an index of 429.6, an increase of nearly 4⅓ times the average product of the years 1879–1888. Next after copper is pig iron, the product of which in 1900 was nearly 3 times the average product of the eighties. Following close on pig iron are bituminous coal,[1] with an index of 293.9 in 1900, and zinc with an index of 292.5. Anthracite coal shows relatively a small increase, reaching 153.3 in 1895, falling in 1897, rising in 1899, and again falling to 142.2 in 1900. Gold comes next with an index of 237.8, then petroleum with an index of 207.8, and lead with an index of 187.8. The product of silver reached its highest point in 1892, the index being 171.6. It then declined to the low point of 134 in 1894, and has since risen to 163.4 in 1900. All of these articles just mentioned have more than doubled their product in 1900 as compared with the average product of the eighties, and in each case, moreover, except silver and anthracite coal, the product for 1900 was the largest on record.

AGRICULTURAL PRODUCTS.

When we pass from metallic and mineral products to agricultural products and live stock, we do not find proportionally so large nor so regular an increase. This is explained, of course, by the fact that already in the eighties the farm products were very large, and the growth of the industries of the country when expressed in percentages appears greater for those industries which begin on a relatively small scale. By far the largest increase in any particular year is shown in the case of potatoes, the crop for 1895 being represented by 171.8 as compared with 100 for the years 1879–1888. But this crop is exceedingly irregular, having fallen to 94.8 in 1897 and risen to 132.2 in 1899 and again falling to 121.9 in 1900. Next to potatoes the largest increase in agricultural production is found in cotton,[2] the article which leads all others is our export trade, yet the highest point reached by the commodity is 174.8 in 1898 in a crop 74.8 per cent larger than the average crop of 1879–1888. The crop of 1899 stood at 142.8 and that of 1900 at 150.7.

Next to cotton, wheat shows the largest increase, this being also a leading export crop. The largest wheat crop was harvested in 1898, being 50.4 per cent larger than the average for 1879–1888. The shortest crop within the past ten years was in 1893 and the crop for 1900 was 16.3 per cent above the average of our ten-year base.[2]

The corn crop, which is the largest single product in the country, shows its highest index in 1896, this being 134.3 on the basis of 100 for 1879–1888. The index for this product has since then fallen considerably below that point, the nearest approach being 123.8 in 1900. The shortest crop since 1881 was in the drought-stricken year 1894, the index being 71.9.[2]

[1] See Appendix I, chart 2.

[2] See Appendix I, chart 3.

The highest index reached by oats was in 1895, this being 138.4, while the crop of 1900 followed closely at 136.2. Rye shows the least gain of the grain crops, reaching 127 in 1891, and since that time ranging from 95.8 to 111.9. The barley crop shows a more persistent gain, its index for 1891 being 152.3; for 1895, 152.7, and since that time ranging from 97.8 to 122.2.

When we consider the live stock of the country we find, of course, less violent changes from one year to another, since the statistics present the number of animals living at each annual period, and this includes a large proportion which already were included in preceding years. For this reason increase or decrease from year to year, being less dependent on weather conditions, shows more accurately the estimate which the stock raiser places on the changing amount of profit in his business. The comparison with manufactures and mining is more apposite. In the case of stock raised for slaughter purposes—cattle, sheep, and swine—there has been an actual falling off in the past decade. (See charts.[1]) The number of cattle in the country reached the highest point in 1892, the index being 131.2. From this point there has been a steady decline, until in 1900 the number of cattle was but 96.3 per cent of the average number of 1879–1888.

A somewhat similar showing holds for sheep, the highest point here, however, being in 1884, when the index was 110.3. From that point there has been a decline, interrupted by a rise to 102.9 in 1893, but falling to 80.1 in 1897, and again rising to 91.2 in 1900. Altogether the net decline for the last year reported is 8.8 per cent below the average number for 1879–1888, but there is a net rise above 1897 of 11.1.

The product of wool should be considered in connection with the number of sheep (see chart). This product reached its highest point, 111.6, in 1885, when sheep stood at 109.7, and following the year when sheep stood at their highest point, 110.3. After a decline wherein the wool clip reached as low a point as 96 in 1889, accompanying the low point of 92.8 for sheep in the same year, there was a recovery, and the index of 112.2 was reached in 1895, although sheep for that year were only at 92.1. The lowest point for wool was in 1897, represented by 93.9, and there has since then been an increase, reaching 104.5 in 1900. At the same time the number of sheep has increased only from 80.1 in 1897 to 91.2 in 1900, indicating that during the period under review the quality of the sheep has improved so that the average amount of wool per sheep has materially increased.

The largest number of hogs in the country was in 1892, the index being 121.2. There had been a rather steady increase in preceding years leading up to this high point, but since then the decline has been marked, having fallen to 89.4 in 1899.

The showing is different with draft and dairy animals. (See chart.)

[1] Appendix I, charts 4 and 5.

The number of milch cows reached the highest point, 125 in 1895, and, after a slight decline, returned to 123.4 in 1900. There was a much larger increase in horses until 1893, when the index showed 142.1, but since that time there has been a steady decline, usually attributed to the substitution of electric traction, until in 1900 the index stood at 118.7.

In the case of mules there has been a similar movement, the largest number in 1894 being represented by 130, and the number for 1900 by 116.

MANUFACTURES.

Coming now to a consideration of manufactured products, the production of crude steel increased gradually, with only slight variations of decrease, until 1895; and after that year increased with great rapidity until the last year for which statistics are available, 1899, when an enormously high rate of increase, 552 per cent above the average for the ten years, 1879–1888, the highest recorded, is reached.

The production of iron and steel rails has expanded more evenly. In 1881 the production was 120 per cent of the average for the ten years. In 1887 the highest percentage of increase (154.9) was reached, but after a general decline, broken by short rises until 1894, production increased again, and in the last year, for which figures are at hand, had risen nearly to the 1887 point.[1]

In default of statistics showing directly the amount of output of cotton and woolen mills, the amount of their takings of raw cotton and raw wool respectively in successive years may be regarded as some indication of the growth or decline of cotton and woolen manufacture.

The takings of mills do not, in any given year, necessarily represent the production for the same or the following year, but the general rise and fall of takings through succeeding years parallels with tolerable closeness the increase and decrease of output.

A striking exception will be noted in the case of the woolen industry. The takings of wool reached their highest point in 1896–97, dropping suddenly and greatly in the two following years, and recovering only in part in the following year; while the actual production of woolen mills showed no such increase in 1896–97, and no such drop after that year. The explanation is to be found in the large purchases of wool anticipatory of the "Dingley tariff," which were so large that production did not catch up to them for the four years following.

Cotton takings on the other hand, in the absence of serious disturbing causes, more nearly paralleled the course of production. The proportionate increase and decrease of these takings correspond in general with the takings of wool until 1896–97 is reached, when the cotton takings, in opposition to the great drop in wool, rise rapidly to a high point and remain there for succeeding years.[2]

[1] See Appendix I, chart 6.

[2] See Appendix I, chart, 7.

The comparative consumption of cotton of Northern and Southern mills by absolute figures, not percentages, for successive years is an index of that remarkable expansion of the Southern cotton industry which has been such a feature of the industry in general since 1893–94. At the same time the production of Northern mills has not only not declined (except for a moderate drop after 1894–95), but has increased with great rapidity, production reaching the highest point recorded in 1899–1900, while the slight drop noted for the present year keeps the volume of production far above that of any year before 1898–99.[1]

Since 1871 the production of fermented liquors and of cigars, respectively, shows a generally steady and parallel advance throughout the series of years, while the production of distilled spirits has two periods of sudden rise and fall, the high points being reached in 1881 and 1893, respectively. The former high point indicates the culmination of a period of overproduction, after which the products had to be disposed of in foreign markets and production was reduced; the latter precedes the increase in the revenue tax on distilled liquors imposed in 1894, to escape which, the normal production of the succeeding year was largely anticipated.[2]

RAILROAD TRANSPORTATION.

Reviewing the statistics of relative increase of miles of railroad operated from 1871 to the present time, and the increase and decrease in the number of passengers and tons of freight carried one mile, it is seen that miles operated and ton and passenger miles show a generally regular and parallel course of increase from 1883 to 1892. From that year on, however, the degrees of relative change for each class diverge widely. Speculation in railroad properties in 1892 (indicated by a rather sharper increase of miles operated than for preceding years) led to extensive rate cutting, which, together with the demand made by the Columbian Exposition, caused a sudden rise in the volume of freight and passenger traffic in the following year, 1893, notwithstanding a comparatively light grain crop and the prevailing industrial depression. In 1894 a reaction is shown by a sharp drop in ton and passenger mileage. Since that time miles operated have increased regularly but moderately; passenger mileage has barely recovered the ground lost in 1894, while ton mileage has risen rapidly to a point far higher than that reached in 1893, the previous high point.[3]

MERCHANT MARINE.

When we come to the shipping industry of the United States we notice a marked difference in comparison with the industries just

[1] See Appendix I, chart 8. [2] See Appendix I, chart 9.
[3] See Appendix I, chart 10.

described. Reviewing the increase in the past forty-three years of the exports and imports of the United States, and considering the total amount of this traffic carried in American vessels, it is seen that while the foreign trade increased by amazing strides, especially in the past seven years, the absolute amount carried in American vessels has shown a steady decline, and the comparative amount a still more striking decline.[1]

Considering the distribution of tonnage of the United States merchant marine, it appears that the highest total was reached in the year 1861, and the lowest total since that time in 1881. After that year there was a general increase until 1900, not yet, however, reaching the highest figures of 1861. Statistics for the period also show that while the tonnage engaged in coastwise trade has shown a steady increase, that engaged in foreign trade has steadily declined.[2]

Statistics of tonnage of vessels built in the United States from 1857 to 1900 exhibit wide fluctuations dependent directly upon the financial condition of the country. The highest points reached were in 1864, 1874, 1882, 1891, and 1899. The lowest point was in 1886, and a point almost as low was reached in 1895. The increase from 1895 to 1899 has been from 110,000 tons to 393,000 tons.[3]

THE GOLD STANDARD.

While the investigations of the Industrial Commission have covered directly only the problems of labor and industrial organization and the legislation thereon, yet it can not be overlooked that beneath all industry and labor a fundamental condition is the standard of money and the stock of currency upon which all the arrangements of capital and labor are based. The most important fact in the review of this financial foundation of industry is the official establishment of the finances of the Government on the gold basis, thus placing this country on an equality with other commercial countries in their own markets and in neutral markets. The movement in these countries toward the gold standard is indicated by the following calendar of events compiled from the reports of the Director of the Mint:

1816. Adoption of the gold standard in England on the basis of the pound sterling at 7,322 grams fine in weight.

1871. Adoption of gold standard in Germany.

1871. Establishment of double standard in Japan at ratio of 1 to 16.17.

1873. Suspension of silver coinage and establishment of the gold dollar as the unit of value in the United States. Limitation of coinage of 5-franc pieces on individual accounts in France. Replacing of the silver standard by that of gold in Denmark, Sweden, and Norway.

1875. Suspension of silver coinage on individual account in Italy.

1878. Bland-Allison silver-purchase act, United States.

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[1] See Appendix I, chart 11. [2] See Appendix I, chart 12.
[3] See Appendix I, chart 13.

1879. Resumption of specie payments, United States.
1887. Retirement of trade dollars by United States.
1890. Sherman silver-purchase act, United States.
1892. Gold standard adopted by Austria-Hungary.
1893. Suspension of silver coinage in British India. Repeal of purchasing clause of Sherman Act in the United States.
1897. Adoption of gold standard by Russia and Japan.
1900. Gold standard adopted, United States.

With the adoption of the gold standard as the common monetary basis for the leading countries, the supply of that metal as replenished by the annual production gains increasing significance. That this supply has enormously increased with the increased demand is evident.

World's production of gold, 1873 to 1900.

[Report of Director of the Mint, 1900, p. 105.]

Calendar year.	Value.	Calendar year.	Value.
1873	$96,200,000	1887	$105,774,900
1874	90,750,000	1888	110,196,900
1875	97,500,000	1889	123,489,200
1876	103,700,000	1890	118,848,700
1877	113,947,200	1891	130,650,000
1878	119,092,800	1892	146,651,500
1879	108,778,800	1893	157,494,800
1880	106,436,800	1894	181,175,600
1881	103,023,100	1895	198,763,600
1882	101,996,600	1896	202,251,600
1883	95,392,000	1897	236,073,700
1884	101,729,600	1898	286,586,500
1885	108,435,000	1899	306,584,900
1886	106,163,900	1900	256,462,438

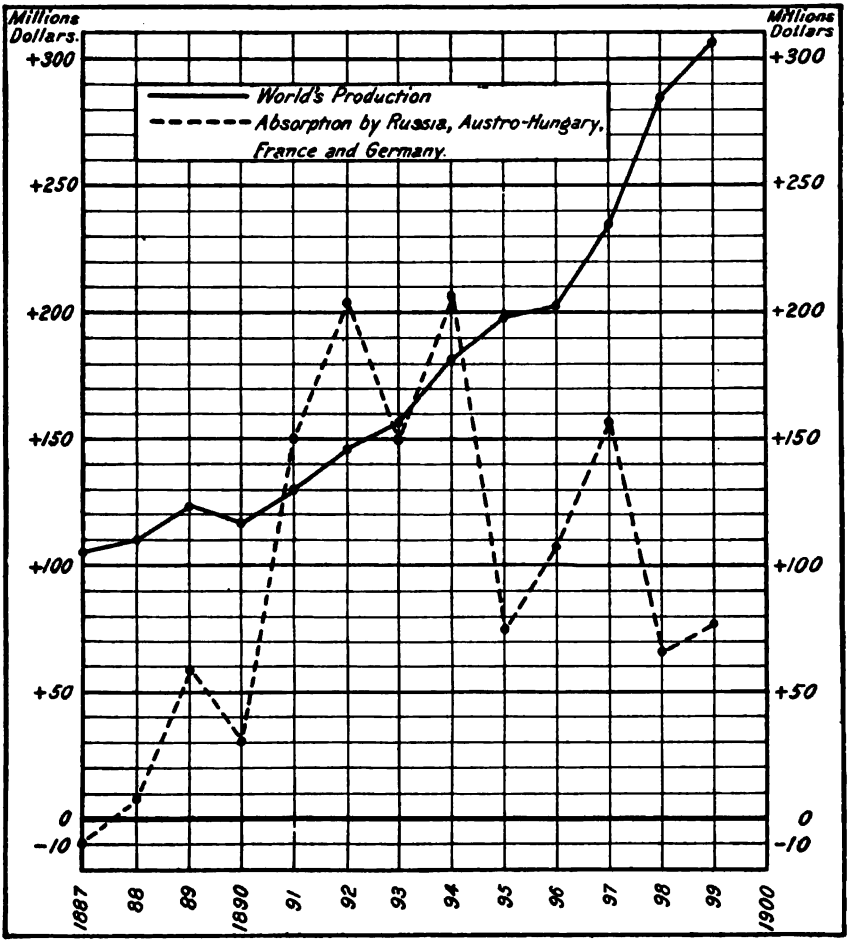
From the year 1873 to 1891, a period of eighteen years, the annual production of gold increased from $96,200,000 to $130,650,000, an increase of $34,450,000, or 35.9 per cent, in the annual product. From 1891 to 1899, a period of nine years, the increase was $175,934,900, an increase of 57.3 per cent over the product of 1891, and 218.8 per cent over the product of 1873. There was a decline of production in 1900 of $63,000,000 below the figures for 1899, owing to the South African war and the closing of the Transvaal mines, whose output at the time of closing had reached a rate of $100,000,000 per year.

In considering whether the supply of gold is increasing in proportion to the growing commerce of gold-using countries, a clear distinction should be made between the circumstances which attended the establishment of the gold standard and the circumstances attending the standard when once established. During the process of establishing the standard in Russia, Austria-Hungary, and other countries, between the years 1891 and 1897, large quantities of paper and silver money were retired and gold was imported to take their place. At the same time Germany and France added largely to their stock of gold in order to protect their reserves. This necessarily drew upon the supply of gold from the mines, and upon the stock in other countries. While this

movement continued there was apparent scarcity of the metal, with attendant stringency in the money markets and depression of trade, but after these countries had completed their transition to the gold basis they not only ceased to draw upon the world's stock but actually yielded a portion of their own accumulations.

Tables compiled for this report (see Appendix II,) and the chart below presented show this movement of gold. In the four years

Gold production and absorption.



preceding 1891 the four countries above mentioned absorbed much less than the annual product, but in the four years 1891 to 1894 they absorbed $105,000,000 in excess of the world's product, and again in 1896 and 1897 they took 60 per cent of the world's product. Large quantities of this excess were drawn from the United States, which in the six years 1891 to 1896 lost $27,000,000 more than

the annual domestic product. In 1897 Russia and Austria-Hungary completed their transition to the gold standard, and thenceforth the exports and imports of gold followed the ordinary trade movement, undisturbed by changes in monetary systems. At the same time came the enormous increase in output from South Africa and Alaska. The result was that, instead of taking gold from other countries these four countries left in 1898 and 1899 a surplus of nearly $225,000,000 per year for other countries. The United States, instead of losing gold, has by means of an unprecedented balance of merchandise trade absorbed more than half this surplus. The stock of gold, which had reached $705,800,000 in 1888, fell to its lowest point—$600,000,000—in 1896, and rose to $1,124,729,261 in 1901, an increase of 87 per cent in five years.

Total currency in the United States and proportion of gold.

[Report on the Finances, 1900, pp. cxxxvi foll. and p. cxli, and circulation statement for July, 1901.]

Year ending July 1—	Total currency.	Gold.[1]	Per cent gold.
1878	$789,790,976		
1879	1,033,640,891	$245,741,837	23.8
1880	1,185,550,327	351,841,206	29.6
1881	1,349,592,373	478,484,538	35.4
1882	1,409,397,889	506,757,715	35.9
1883	1,472,494,345	542,732,063	36.8
1884	1,487,249,838	545,500,797	36.7
1885	1,537,433,550	588,697,036	38.3
1886	1,561,407,774	590,774,461	37.8
1887	1,633,412,705	654,520,335	40.1
1888	1,691,441,027	705,818,855	41.7
1889	1,658,672,413	680,063,505	41.0
1890	1,685,123,429	695,563,029	41.3
1891	1,677,794,044	646,582,852	38.5
1892	1,762,219,197	664,275,335	37.8
1893	1,738,808,472	597,697,685	34.4
1894	1,805,078,961	627,293,201	34.7
1895	1,819,359,557	636,256,023	34.9
1896	1,799,975,033	599,597,964	33.3
1897	1,905,996,619	696,239,016	36.5
1898	2,073,574,442	861,514,780	41.1
1899	2,190,093,905	963,498,384	44.0
1900	2,339,700,673	1,034,384,444	44.2
1901	2,483,567,605	1,124,729,261	45.3

[1] Line D, chart, p. 22.

This increase in the stock of gold brought the United States in 1900, to the first place, taking precedence over France, the next in order, by an amount of nearly $200,000,000.

World's stock of gold—Quantity and order of precedence.

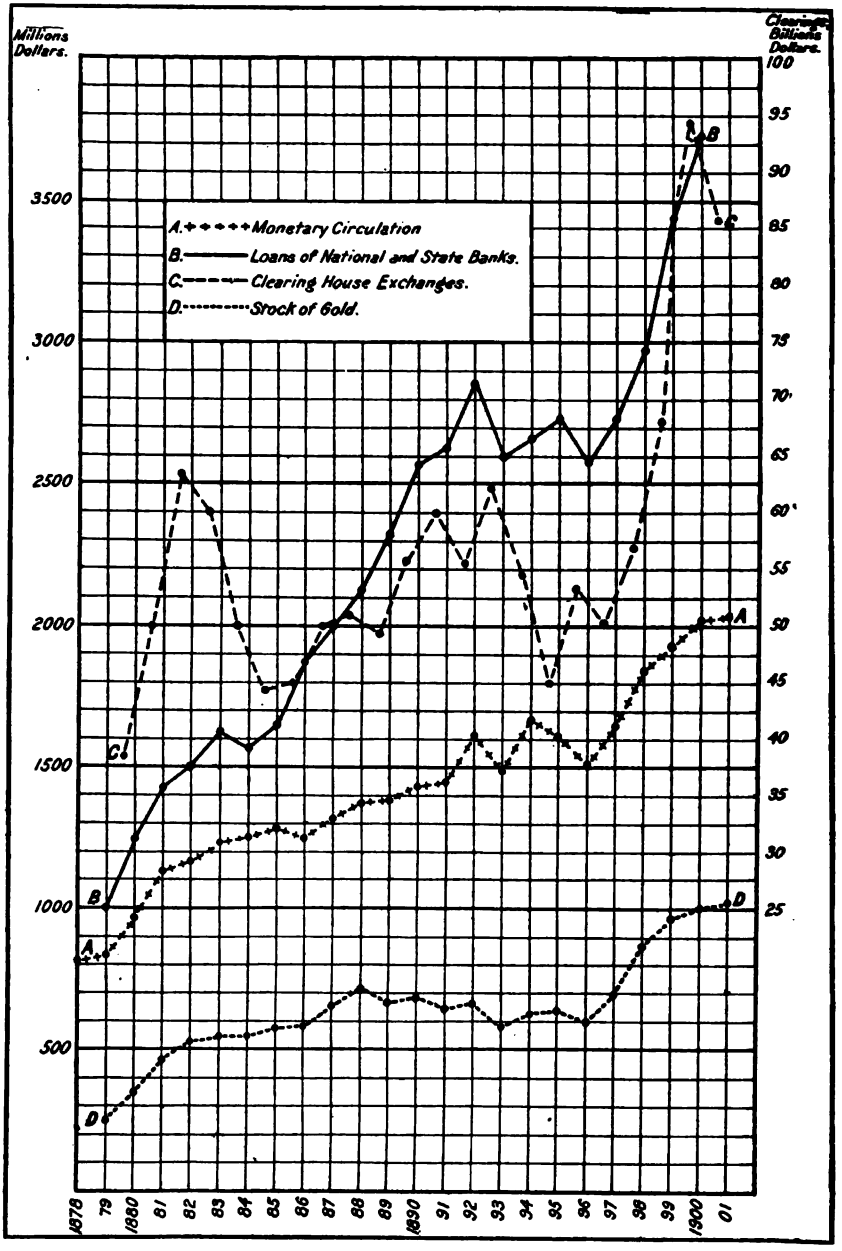
[Reports Director of the Mint.]

Country.	1885.	1893.	1900.
United States	$565,920,000 (2)	$618,100,000 (3)	$1,020,200,000 (1)
France	840,000,000 (1)	850,000,000 (1)	810,600,000 (2)
Russia	176,100,000 (5)	480,000,000 (5)	791,700,000 (3)
Germany	401,120,000 (4)	625,000,000 (2)	697,900,000 (4)
Great Britain	510,600,000 (3)	580,000,000 (4)	486,700,000 (5)
Total world	3,073,720,000	3,901,000,000	4,841,000,000

For fifteen years the stock of gold held by Great Britain had actually declined; but it must be borne in mind that the quantity of gold reserve

is not the sole criterion of a nation's financial power. With the leading countries established on the same monetary basis, the bare

Currency movement, 1878–1900.



quantity of reserves does not have as great significance as the supply of capital for investment and a credit balance due from other countries.

These Great Britain possesses beyond all other countries, owing to her ownership of international securities, her foreign investments and earnings, colonial government accounts, etc. With these enormous credits continually payable in London, coupled with a highly developed deposit and check system, it is possible for Great Britain to conduct her immense financial operations on a relatively small gold reserve.

VOLUME OF MONETARY CIRCULATION.

In addition to the stock of gold available for Government and business purposes, there was, in 1900, of other kinds of currency, including silver, subsidiary coin, United States notes, national-bank notes, and fractional currency, an amount equal to $1,258,837,344. This is nearly double the aggregate amount of these kinds of money of the year 1879, and the total currency of all kinds in the Treasury and in circulation in 1901 was $2,483,567,605, which was 2.3 times the total amount of currency in 1879, and 3.2 times the total in 1873.

The significant change which has occurred in the years under review is the increased proportion of gold in the aggregate of all currency. In 1879 gold amounted to 23.8 per cent of the total currency. In 1890 it had risen to 41.3 per cent, but fell in 1896 to 33.3 per cent. Again, in 1901, gold amounted to 45.3 per cent of the total currency. (See table, p. 21.)

The full significance of the increase in currency can not be adequately measured except by distinguishing between that portion which belongs to the Treasury of the United States and that which is in circulation among the people, since it is the latter only that is available for the business community.

Money in treasury and in circulation.

[Report on the Finances, 1900, p. cxii.]

Year ending July 1—	In Treasury, as assets.	In circulation.[1]	Circulation per capita.
1873	$22,563,801	$751,881,809	$18.04
1878	60,658,342	729,132,084	15.32
1879	215,009,098	818,631,798	16.75
1880	212,168,099	978,382,228	19.41
1881	235,354,254	1,114,238,119	21.71
1882	235,107,470	1,174,290,419	22.37
1883	242,188,649	1,230,305,096	22.91
1884	243,323,869	1,243,925,069	22.65
1885	244,864,985	1,292,568,615	23.02
1886	308,707,249	1,252,700,525	21.82
1887	315,873,562	1,317,539,143	22.45
1888	319,270,157	1,372,170,870	22.88
1889	278,310,764	1,380,361,649	22.52
1890	255,872,159	1,429,251,270	22.82
1891	180,353,337	1,497,440,707	23.45
1892	150,872,010	1,601,347,187	24.60
1893	142,107,227	1,596,701,245	24.06
1894	144,270,253	1,660,808,708	24.56
1895	217,391,084	1,601,968,473	23.24
1896	293,540,067	1,506,434,966	21.44
1897	265,787,100	1,640,209,519	22.91
1898	235,714,547	1,837,859,895	25.19
1899	286,022,024	1,904,071,881	25.62
1900	284,549,675	2,055,150,998	26.94
1901	306,301,325	2,177,266,280	28.00

[1] Line A, chart, p. 22.

There have been excessive fluctuations in the amounts held by the Treasury, thus materially affecting the amounts in circulation. The smallest balance held by the Treasury during the twenty-three years from 1878 to 1901 was in January, 1894, when it amounted to $108,372,617. From this low point the balance has increased to $306,301,325 on July 1, 1901, the largest balance held by the Treasury on that date for any year except 1886 and 1887. Of this amount the law of March 14, 1900, requires $150,000,000 to be held in gold as a minimum reserve against outstanding United States notes, amounting to a fixed sum of $346,681,016, and the Secretary of the Treasury is required, whenever the gold reserve falls below this $150,000,000, to replenish it from loans. For this reason the share absorbed by the Treasury from the total stock of money in the country can not again fall as low as it was in the year 1896.

The foregoing statements show that there are three causes which control the amount of money in circulation among the people: (1) gold exports and imports; (2) internal expansion or contraction of Government money and bank money; (3) surplus and deficit revenues of the Government Treasury. Taking these three factors into account there have been, on the whole, four rather distinct periods in the movement of monetary circulation (see accompanying chart, line A, and preceding table), first from 1878 to 1883, when the increase amounted to 68.7 per cent, or 13.7 per cent per year; second, from 1883 to 1892, 30.2 per cent, or 3.3 per cent per year; third, a decline for 1892 to 1896 of 6.9 per cent, or 1.7 per cent per year; and, fourth, an increase from 1896 to 1901 of 45.1 per cent, or 9 per cent per year. As a final result the circulation in 1901, amounting to $2,177,266,280, was 3 times the circulation of 1878 and 2.9 times the circulation of 1873.

Perhaps this increase in circulation during two decades may be more fairly shown by comparing it with the increase in population. Tables prepared in the Treasury Department (see preceding table) show that from 1873 to 1878 there was a decrease in the per capita circulation from $18.04 to $15.32, the lowest point reached since the period of the civil war. From that date to 1883 there was an increase to $22.91 per capita, an increase of 43.3 per cent. With slight fluctuations the circulation per capita rose to $24.56 in 1894. This is followed by the abrupt decline to $21.44 in 1896, a decrease of 13.3 per cent in two years. Following 1896 the increase to 1901 was 30.5 per cent, or an increase from the low point of 1878 amounting to 83 per cent, and from this point in 1873 of 55.5 per cent.

Considering the causes which have affected the volume of circulation in the four periods under review, we should notice for the first period the resumption of specie payments on January 1, 1879; next, the enormous net imports of gold, which in thirty months—from August,

1879, to January, 1882—amounted to $206,000,000; next, the coinage of silver dollars at the rate of $2,000,000 per month; finally, the increase in national-bank circulation, amounting to $18,300,000 from October, 1878, to October, 1881. These factors combined brought about the increase in circulation already mentioned of 68.7 per cent in five years.

In the second period, when the circulation increased 3.3 per cent per year for nine years—1883 to 1892—there was a net increase of gold amounting to $122,000,000,[1] and a decrease in national-bank notes of $178,000,000,[2] but an increase of silver at the rate of $24,000,000 per year for seven years, and $40,000,000 per year for two years.

In the third period, 1892 to 1896, when circulation declined 6.9 per cent, there was a net loss of gold through its exportation amounting to $201,000,000, a large part of this being taken, as already stated, by Russia and Austria-Hungary for the purpose of substitution for paper currency. There was also the repeal of the silver-purchase act in August, 1893, and an increase in the holdings of the Treasury of more than $140,000,000.[3] This was partially offset by an increase of $50,000,000 in national-bank notes.

In the fourth period, 1896 to 1901, when circulation increased at the rate of 9 per cent per year, the leading causes were the enormous importations of gold consequent upon increase in the world's production and the completion of European currency changes and the industrial revival in the United States, the net imports for five years being $213,000,000, added to a domestic production exceeding $300,000,000.

BANK LOANS.

The monetary circulation of the country is made available for business enterprises largely through the banking system of the country. The loans of national and State banks, representing the accommodation granted to industry, amounted to $1,069,000,000 in 1879, and increased to $1,631,000,000 in 1883, an increase of 52.6 per cent at the time when the monetary circulation increased 68.7 per cent. (See accompanying chart, line B, and table.) From 1883 to 1892 there was an increase of 75.4 per cent in loans, while circulation increased 30.2 per cent. From 1892 to 1896 loans decreased 9.4 per cent, while circulation decreased 6.9 per cent. From 1896 to 1900 loans increased 44.4 per cent, while circulation increased 36.9 per cent. The amount of loans outstanding in October, 1900, amounted to $3,716,000,000, an increase of 3½ times over the amount outstanding in 1879.

[1] See chart, p. 22, and table, p. 21.

[2] National-bank notes outstanding June 30, 1883, $347,855,146; June 30, 1892, $167,306,957.

[3] See table, p. 23.

Loans of national and state banks.[1]

[$000,000 omitted.]

Years.	National banks.[2]	State banks.[3]	Total.[4]
1879	878	191	1,069
1880	1,041	207	1,248
1881	1,173	251	1,424
1882	1,243	272	1,515
1883	1,309	322	1,631
1884	1,245	331	1,576
1885	1,306	348	1,654
1886	1,451	331	1,782
1887	1,587	436	2,023
1888	1,684	432	2,116
1889	1,817	505	2,322
1890	1,986	582	2,568
1891	2,005	623	2,628
1892	2,171	699	2,870
1893	1,844	757	2,601
1894	2,007	666	2,673
1895	2,059	693	2,752
1896	1,893	697	2,590
1897	2,067	670	2,737
1898	2,172	814	2,986
1899	2,496	909	3,405
1900	2,686	1,030	3,716
1901	3,051	1,194	4,235

[1] Report of Comptroller of the Currency, 1900, Vol. I, pp. 573, 579, et seq.
[2] First week of October of each year.
[3] Year ending June 30.
[4] See line B, chart, p. 22.

BANK CLEARINGS.

Business activity of the country, in so far as it is based upon the loans and deposits of the banks, is indicated in the bank clearings. Bank clearings indicate the quantity of business conducted through the medium of checks, and are therefore an exact measure of the activity of large wholesale and manufacturing establishments and of the speculative exchanges. It is of some importance in this connection to distinguish between the clearings of New York, the center of speculative transaction, and the remainder of the country, wherein the clearings indicate more accurately actual exchange of property and products. Outside New York clearings have increased from $9,290,800,000, in 1879, to $33,526,385,487, in 1900, an increase of nearly fourfold.

Bank clearings.[1]

Year.	New York clearings.	Increase (+) or decrease (−).	Clearings outside New York.	Increase (+) or decrease (−).	Total clearings.[2]	Increase (+) or decrease (−).
		Per cent.		*Per cent.*		*Per cent.*
1900	$52,684,201,865	−13.4	$33,526,385,487	+ 0.3	$86,160,587,352	− 8.5
1899	60,761,791,901	+44.8	33,416,297,332	+23.9	94,178,089,233	+36.6
1898	41,971,782,437	+25.6	26,959,415,287	+12.6	68,931,197,724	+20.2
1897	33,427,027,471	+15.8	23,894,945,735	+ 6.4	57,321,973,206	+11.7
1896	28,870,775,056	− 3.3	22,463,156,383	− 4.2	51,333,931,439	− 3.7
1895	29,841,796,924	+22.3	23,430,494,490	+10.1	53,272,291,414	+16.6
1894	24,387,807,020	−22.0	21,157,303,037	− 7.6	45,545,110,059	−15.9
1893	31,261,087,780	−14.7	22,962,270,278	− 9.4	54,223,308,008	−12.5
1892	36,662,469,202	+18.6	25,348,638,020	+10.8	62,011,107,222	+ 9.5
1891	33,749,322,212	− 9.9	22,987,037,805	− .8	56,736,360,017	− 6.4
1890	37,458,607,609	4.4	23,165,332,888	+14.2	60,623,940,497	+ 7.9
1889	35,885,104,905	+15.4	20,280,223,091	+10.0	56,175,327,996	+13.4
1888	31,100,027,521	− 7.1	18,441,607,367	+ 4.3	49,541,634,888	− 3.1
1887	33,474,556,268	− .6	17,672,972,826	+13.2	51,147,529,094	+ 3.8
1886	33,676,829,612	+19.6	15,616,891,606	+17.2	49,293,721,218	+18.9
1885	28,152,201,336	− 9.1	13,321,839,708	+ .8	44,474,041,044	− 6.1
1884	30,985,871,170	−17.2	13,214,113,613	− 7.6	44,199,984,783	−14.6
1883	37,434,300,872	−20.2	14,297,171,924	+ 2.4	51,731,472,796	−15.0
1882	46,916,955,081	− 5.0	13,962,286,579	− .9	60,878,241,610	− 4.0
1881	49,376,882,883	+27.9	14,094,506,361	+23.9	63,471,389,244	+27.0
1880	38,614,448,223	+32.1	11,375,400,000	+22.4	49,989,848,223	+29.7
1879	29,235,673,829	+47.2	9,290,800,000	+16.8	38,526,473,829	+38.5

[1] Compiled from tables, Commercial and Financial Chronicle, January 12, 1901, p. 64.
[2] See line C, chart, p. 22.

The increase in New York for the same period has been from $29,235,000,000 to $60,761,791,901, in 1899, an increase of only two-fold. Even this showing exaggerates the relative growth of New York, since New York's clearings in 1881 were over $49,000,000,000, or only 19 per cent less than in 1900, whereas the clearings outside New York in 1881 were more than 60 per cent less than in 1900. The years 1881 and 1899 for New York and 1900 for banks outside New York are proper years for comparison, since they were the years when in each period of business activity speculation reached the top.

The foregoing inferences in comparing the clearings in New York with those in the remainder of the country are considerably modified, if account be taken that in May, 1892, there was established in New York the Stock Exchange clearing house, for the express purpose of relieving the bank clearing house of the pressure of its exchanges. In the Stock Exchange clearing house stock sales made by brokers are balanced and cleared against each other, just as in the bank clearing house bank checks are cleared. The broker, instead of making out checks for all the stocks he buys and receiving checks for all he sells, simply sends to the Stock Exchange clearing house a statement of his purchases and sales with a check for the difference that he owes, or a draft for the balance due him on his trades. Thus a single check each day, through the Stock Exchange clearing house, takes the place of many checks through the bank clearing house. The extent of this relief afforded by the Stock Exchange clearing house may be inferred from the fact that the values of stocks bought and sold on this single exchange ranged from $3,094,942,769 in the year 1894 to $13,429,291,715 in 1899, and that the number of shares dealt in ranged from 49,075,032 in 1894 to 176,421,135 in 1899.

Number and value of shares sold at New York Stock Exchange.

[Commercial and Financial Chronicle, January 12, 1901, p. 64.]

Calendar year.	Stocks.	Average price.	Values (approximate).
	Shares.		
1900	138,380,184	$69.2	$9,249,285,109
1899	176,421,135	78.6	13,429,291,715
1898	112,699,957	72.7	8,187,413,985
1897	77,324,172	67.0	4,973,553,064
1896	54,654,096	65.2	3,329,969,940
1895	66,583,232	60.3	3,806,338,604
1894	49,075,032	64.2	3,094,942,769
1893	80,977,839	60.3	4,550,260,916
1892	85,875,092	63.5	4,874,014,262
1891	69,031,089	57.1	3,812,247,419
1890	71,282,985	60.2	3,977,664,193
1889	72,014,600	61.0	4,059,231,891
1888	65,179,106	62.5	3,539,519,143
1887	84,914,616	61.1	4,508,778,899
1886	100,802,050	65.6	5,885,662,200
1885	92,538,947	64.1	5,479,859,840
1884	96,154,971	61.77	5,939,500,000
1883	97,049,909	64.51	6,260,809,961
1882	116,207,271	66.12	7,689,453,436
1881	114,511,248	71.59	8,197,506,403

Notwithstanding the establishment of the Stock Exchange clearing house, stock speculation continues to play a very important part in the ordinary bank clearings of New York, whereas its importance is less in the clearing houses outside New York. For this reason it is significant to notice that whereas the clearings in New York in 1900 fell 13.4 per cent below those in 1899, yet outside New York the clearings slightly increased, and that they have steadily increased since 1896, indicating that the prosperity and business activity of the manufacturing and mercantile classes, apart from strictly speculative interests, continues unabated. (See table, p. 26, and chart, p. 21.)

This conclusion is still further emphasized if we compare the clearings for the month of June, 1901, the latest month preceding the preparation of this final report, with the corresponding month in 1900. The comparison is as follows:

Bank clearings, June, 1901 and 1900.

	New York.	Increase.	Outside New York.	Increase.
		Per cent.		*Per cent.*
June, 1901	$4,860,782,255	77.1	$3,244,900,575	16.1
June, 1900	3,874,208,341	.....	2,796,408,262	.....

From this table is seen the enormous increase in speculative transactions in New York, amounting in June, 1901, to 77.1 per cent above those of June, 1900, whereas outside New York the increase (16.1 per cent) continues along the same moderate lines of the preceding four years.

WHOLESALE PRICES.

The volume of monetary circulation and the volume of bank loans furnish the standard with reference to which all commodities are bought and sold. The prices of each commodity rise and fall according to its own demand and supply, but beneath the particular rise and fall of each commodity is the general rise and fall of all commodities as measured by the volume of circulation and bank loans. In times of business prosperity, with increasing circulation and increasing loans, and an increasing activity, as shown in bank clearings, the prices of all industrial products rise together, some at a rapid rate, others at a slower rate, owing to the different conditions affecting each. Products are bought and sold on a higher and higher level of prices. Again, in times of depression, with decreasing circulation and decreasing loans, and a decreasing volume of bank clearings, the general level of prices falls, and the trade of the country is conducted on a lower and lower level of prices.

These effects show themselves first in the prices of stocks, then in the wholesale prices of products, and last in wages and retail prices

of products. The prices of stocks are first affected, because these are, so to speak, nearest the money supply, and they represent the anticipation of future earnings and dividends. With abundance of money, low rates of interest, and good prospects of profits they quickly respond and rise in price, but with the opposite condition they fall in price. Railroad and transportation stocks are a well-recognized criterion of the general conditions of business, since these depend for their profits on the traffic in merchandise. The following table shows the movement of prices of 28 railroad stocks for the twenty-three years, from July, 1878, to June, 1901, the average prices for the ten years 1879–1889 being taken as a basis at 100 for each stock.[1]

Movement of prices of 28 railroad stocks July, 1878, to June, 1901, average prices for 1879–89 being 100.

1878–79	73	1886–87	101	1894–95	84
1879–80	98	1887–88	98	1895–96	88
1880–81	114	1888–89	100	1896–97	86
1881–82	116	1889–90	105	1897–98	99
1882–83	112	1890–91	98	1898–99	115
1883–84	97	1891–92	102	1899–1900	126
1884–85	75	1892–93	103	1900–1901	143
1885–86	87	1893–94	87		

From this table it can be seen that in the two years 1878–79 to 1880–81 the prices of stocks rose from an index number of 73 to 114, an increase of 56.2 per cent, and to 116 in 1881–82, an increase of 58.9 per cent, and stood at 112 in 1882–83, an increase of 53.4 per cent. During this period circulation increased 53.2 per cent, loans increased 52.6 per cent, and clearings increased 66.6 per cent.

The sharp depression of 1884–85 brought stocks down to 75, a decline of 35.4 per cent, and there was a heavy decline in clearings and a slight decline in loans, but not in circulation. The recovery which followed served to keep stocks at about 100 until 1892–93, at a time when loans, circulation, and clearings were all increasing. The severe depression of 1893 brought a low level of prices, the average being about 85 for four years, until 1896–97. Since then has occurred an unprecedented rise, the average for 1900–1901 being 143, an increase in four years of 66.3 per cent. During these four years circulation increased 36.5 per cent, loans 44.4 per cent, and clearings 67.9 per cent.

Analogous, but not so extreme, have been the changes in wholesale prices of products. The following table shows the movement of 66 staple products of American industry, each product being given an importance according to the volume of its production.[2]

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[1] See also Appendix III, Tables 1 and 2, and chart 1, line A.

[2] See also Appendix III, Tables 3 and 4, and chart 1, line B.

importation of gold could not have occurred had it not been for two circumstances affecting the world's gold supply described above, viz, the cessation of gold purchases by Russia and Austro-Hungary, which, with the protective monetary measures of Germany and France, had, during the four years 1891 to 1894, absorbed more than the world's annual product; and, secondly, the greatly increased output of gold from South Africa and Alaska. With large crops and high prices and enormous gold imports, farmers were able to pay their debts. The resources of the New York banks accumulated, and they increased their loans from $501,000,000 in July, 1897, to $780,000,000 in March, 1899, an increase of 36 per cent. The remarkable prosperity of 1899, thus inaugurated by the farmers, rapidly spread to other industries.

This is shown by comparing the prices of breadstuffs and the prices of metals, minerals, and manufactures. During the time when the agricultural group was enjoying its buoyancy the metals and minerals continued depressed, reaching the lowest point, 78, at nearly the time when agricultural products reached their highest point, 86. But beginning with the new crop year, July, 1898, and continuing through the year 1900, the groups have changed places, and the temporary gain of agriculture has been lost. The index number for breadstuffs fell to 73 in 1899–1900, and rose to 81 in 1900–1901. This is directly traceable to the enormous crops of cotton and wheat throughout the world in 1898. In that year the world's crop of cotton was 12 per cent above the average for the nine years from 1890, and the crop of wheat was 14 per cent above the average. While, therefore, the prices of agricultural products declined, the increased prosperity was shifted for the time to other producers, especially to those of metals, minerals, and lumber, in which the index number rose from 1897–98 to 1899–1900 from 83 to 110, and in the case of iron from 46 to 89. It was iron and its products that gave character to the boom of 1899. The iron group was at only 45 in November, 1898, but the following November, 1899, it stood at 96, an increase of 113 per cent in twelve months.

In November, 1899, the tide turned. In October of the preceding year the Bank of England had raised its rate to 4 per cent in order to check the export of gold to America. This had a moderate effect in that direction, but importations of gold into the United States continued steadily on a small scale except for the one month, June, 1899, which followed the payment of $20,000,000 in gold to Spain for the Philippine Islands. The Bank of England then lightened its rate to 3 per cent, but this did not long continue. Early in October, 1899, the Bank of England raised its rate to 5 per cent, and in December to 6 per cent. This was owing to hostilities in the Transvaal, and the stoppage in the flow of gold from that region. Money tightened in New York, the importaton from Europe ceased, and in December and January net exports to the amount of $10,000,000 took the place of imports.

For the year it will be seen that the excess of exports over imports of gold was $3,693,575. The surplus resources of the national banks fell below the legal limit. They reduced their loans from $780,000,000 in March to $680,000,000 in December. The rate on call loans jumped to 11 per cent in October, and the average for December was 37 per cent. In November, Secretary Gage attempted to relieve the strain by his offer to purchase $25,000,000 worth of United States bonds.

The significance of the war in the Transvaal consisted in its sudden abstraction of one-fourth of the world's entire annual production of gold, and this came at the most awkward possible moment, when the European banks were not prepared to sustain the greatly increased loans which they had granted.

The effect of this restriction on the gold supply was seen first in the prices of stocks, which rapidly fell; then in iron and the metals and minerals. Iron, which had profited most in the boom, suffered most in the decline, and has fallen to an average of 60 for the year 1900–1901, a decline of 32 per cent. Pig iron reached its lowest point (54) in 1897–98, and its highest point (99) in 1899–1900, a rise of 83 per cent, and fell to 70 in 1900–1901, a decline of 29 per cent from the preceding year.

Next to iron manufactures the principal movement of the past four years was in mineral manufactures. This group had risen from 76 in October, 1897, to 112 in December, 1899, and then fell to 95 in June, 1901, after which it rose to 100 in February. The index number of the group for the year 1900–1901 is 106, showing a slight decline from 107 for the preceding year.

Considering individual articles, the fall in the group was caused mainly by coke, refined petroleum, and turpentine. These declines overcame the rise in glass in February, 1901, and a further rise in June, following an alliance of glass manufacturers and jobbers.

The decline in the metal group for the year 1900–1901 is 14 points—namely, from 99 to 85. The principal drop occurred in the summer of 1900. As already intimated, the main influence upon the group is found in pig iron, which dropped 29 points.[1]

In the group of minerals and lumber there is a decline for the year from 118 to 107. This decline also occurred after March, 1900. The principal declines occurred in lumber and petroleum. Anthracite coal rose in October, 1900, following the strike, and has maintained a higher price since that time.

Manufactures based on agricultural products indicate a rise from 68 in 1897–1899 to 82 in 1899–1900 and then a decline to 81 for the year 1900–1901. The principal decline occurred in print cloth at the same time, when raw cotton rose in price.

[1] See Appendix, III, Table 3.

The only groups in which a rise occurred during the year 1900–1901 were dairy products (from 91 to 93), breadstuffs (from 73 to 81), and plants and fibers (from 76 to 84). The other group representing the farmers' interest, namely live stock, shows a fall from 99 to 96, as does also the group of slaughter products from 105 to 94.

The following table shows the relative standing of the three large producing interests for the past two years of industrial prosperity compared with their standing during the ten years 1879–1889. On the basis of 100 for the ten years 1879–1889 the general level of prices in 1899–1900 was 90 and in 1900–1901 was 88. The groups which in 1899–1900 were above the average were live stock, 99; dairy products, 91; metals, 99; minerals and lumber, 119; slaughter products, 105; mineral manufactures, 107. Three groups were below the average—breadstuffs, 73; plants and fibers, 76, and iron manufactures, 89—while one group, agricultural manufactures, was, at the average, 90.

In the next year, 1900–1901, the groups above the average of 88 were: Live stock, 96; dairy products, 93; minerals and lumber, 107; slaughter products, 94; and mineral manufactures, 106. A single group, metals and minerals, had fallen during the year below the average, and took its place with breadstuffs, 81; plants and fibers, 84: iron manufactures, 60; and agricultural manufactures, 81.

The rise in breadstuffs is mainly due to corn and wheat. The rise in plants and fibers is mainly due to cotton and hay, supported by the less weighty products, beans and flaxseed, but counteracted by a decline in potatoes and wool.

Price movements of leading groups of products.

	1879–1889.	1899–1900.	1900–1901.
All products	100	90	88
Farmers' groups:			
Live stock	100	99	96
Dairy products	100	91	93
Breadstuffs	100	73	81
Plants and fibers	100	76	84
Mining and forestry:			
Metals	100	99	85
Minerals and lumber	100	118	107
Manufacturers' products:			
Slaughter products	100	105	94
Iron manfactures	100	89	60
Mineral manufactures	100	107	106
Agricultural manufactures	100	90	81

FOREIGN TRADE AND BALANCE OF TRADE.

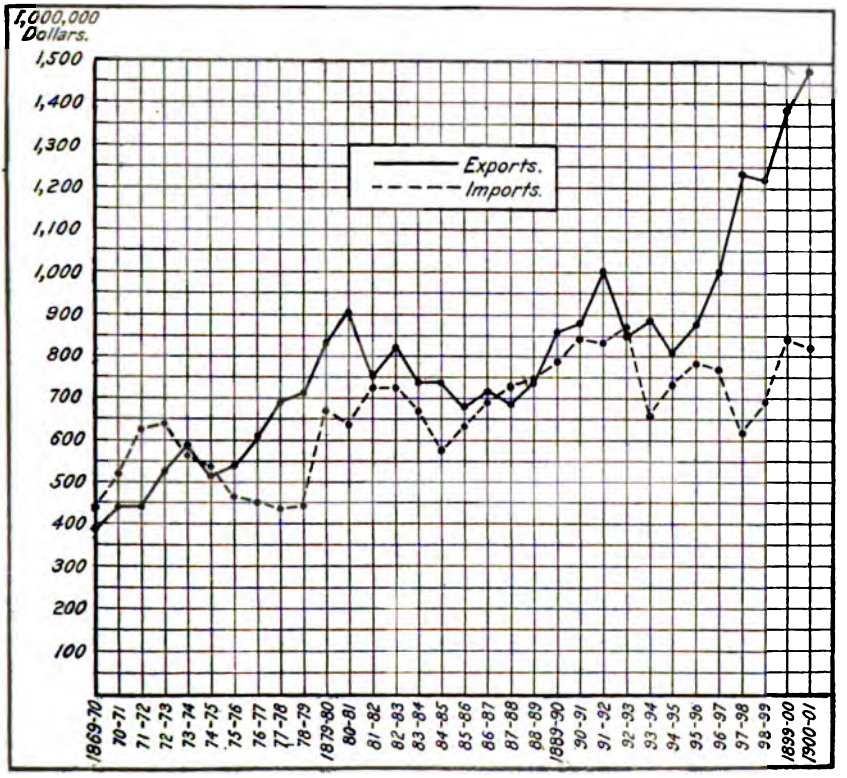
The stock of money in the country depends partly upon the international balance growing out of foreign exports and imports. No feature of American industry during the past five years, apart from the consolidations of corporations, is more remarkable or has attracted more attention than the growth of the export trade and the enormous increase in the "balance of trade."

Merchandise exported and imported and excess of imports and exports.

[Monthly Summary of Commerce and Finance, United States, June, 1901, page 3189.]

Years ending June 30—	Total exports.	Imports.	Excess of exports over imports.	Excess of imports over exports.
1870	$392,771,768	$435,958,409		$43,186,640
1871	442,820,178	520,223,684		77,403,506
1872	444,177,586	626,595,077		182,417,491
1873	522,479,922	642,136,210		119,656,288
1874	586,283,040	567,406,342	$18,876,698	
1875	513,442,711	533,005,436		19,562,725
1876	540,384,671	460,741,190	79,643,481	
1877	602,475,220	451,323,136	151,152,084	
1878	694,865,766	437,051,532	257,814,234	
1879	710,439,441	445,777,775	264,661,666	
1880	835,638,658	667,954,746	167,683,912	
1881	902,377,346	642,664,628	259,712,718	
1882	750,542,257	724,639,574	25,902,683	
1883	823,839,402	723,180,914	100,658,488	
1884	740,513,609	667,697,693	72,815,916	
1885	742,189,755	577,527,329	164,662,426	
1886	879,524,830	635,436,136	244,088,694	
1887	716,183,211	692,319,768	23,863,443	
1888	695,954,507	723,957,114		28,002,607
1889	742,401,375	745,131,652		2,730,277
1890	857,828,684	789,310,409	68,518,275	
1891	884,480,810	844,916,196	39,564,614	
1892	1,030,278,148	827,402,462	202,875,686	
1893	847,665,194	866,400,922		18,735,728
1894	892,140,572	654,994,622	237,145,950	
1895	807,538,165	731,969,965	75,568,200	
1896	882,606,038	779,724,674	102,882,264	
1897	1,050,993,556	764,730,412	286,263,144	
1898	1,231,482,330	616,049,654	615,432,676	
1899	1,227,023,302	697,148,489	529,874,813	
1900	1,394,483,082	849,941,184	544,541,898	
1901	1,487,755,657	822,673,016	665,082,541	

Chart showing merchandise exported and imported.



In 1891–92 the exports for the first time passed the total of $1,000,000,000. That year was exceptional for the period concerned, as is shown by the fact that in the succeeding year exports fell to less than $850,000,000; two years later to a little over $800,000,000. But beginning in the year 1896–97 exports reached $1,050,993,556, an amount in excess of the figures for the exceptional year 1892, and this height now obtained is no longer exceptional, since it has been followed by increases which brought the total for the year 1901 to the large sum of $1,487,656,544. Even this sum does not represent the relative increase in exports, since for the first time the islands of Hawaii and Porto Rico, receiving some twenty-five millions of American exports, are not included in the statements of foreign commerce. Adding this item, the total exports for 1900–1901 exceeded one and one-half billion dollars.

On the other hand, imports for the past five years have been less than for the preceding five years, and the highest point reached in the latter period for value of imports, $849,941,184 in 1900, is lower than those for 1893 and 1894. The year 1901, which showed an increase of $93,173,462 in exports over the total value for the preceding year, showed a decrease in imports of $27,184,651.

As a result of these movements of exports and imports, the balance of trade since 1876 has been against the United States in only three years, 1888, 1889, and 1893. Prior to 1897 the largest balance of trade in favor of the United States was in the year 1879, at the time of enormous crop exports and famines in European countries. The balance at that date was $264,661,666, and this was closely followed in 1881 by a balance of $259,712,718. From that period until 1893 there was an irregular decline in the amount of the favorable balance, together with the three years of unfavorable balance just mentioned; but since the year 1893 the balance has increased irregularly, reaching in 1898 the amount of $615,432,676, which was more than twice the amount of any favorable balance in any preceding year. With slight declines in 1899 and 1900 the balance rose to $664,900,011 in 1901, nearly fifty millions in excess of the balance of 1898, the highest preceding year.

Even this enormous balance does not include the precious metals, and it will doubtless be conceded that since the year in which silver took its place as an article of merchandise it should be included as such. By the addition of silver the aggregate exports for 1901 amount to $1,551,941,724, or including Hawaii and Porto Rico nearly one billion six hundred million dollars. The inclusion of silver also largely increases the balance of trade in favor of the United States, the figures of excess of exports over imports for 1901 being $664,900,001 without silver and $692,801,150 with silver.

Merchandise, including silver, imported and exported, and the annual excess of exports, 1894 to 1901.

[Monthly Summary of Commerce and Finance, United States, June, 1901, page 3189.[

Year ending June 30—	Total exports.	Imports.	Excess of exports over imports.
1894	$942,591,837	$668,281,174	$274,310,663
1895	854,883,451	752,181,144	102,652,307
1896	943,148,608	808,501,860	134,646,748
1897	1,112,940,194	795,263,639	317,676,555
1898	1,286,587,569	646,977,435	639,610,134
1899	1,283,342,357	727,823,545	555,518,812
1900	1,451,195,357	885,197,486	565,997,871
1901	1,552,040,737	859,057,057	692,983,680

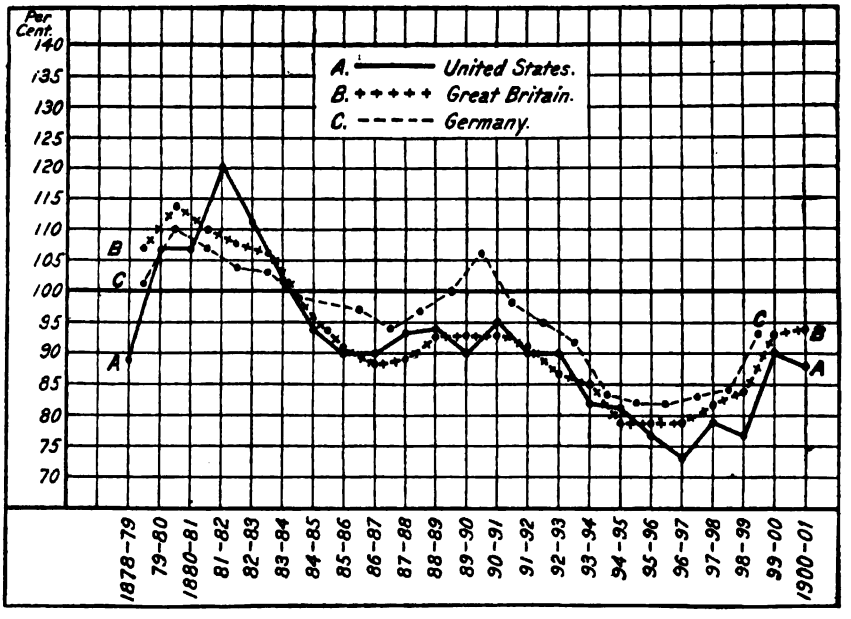
It is impossible that the payments for this enormous balance of trade should have been made to this country in gold. The balances of the past four years have each amounted to two-thirds of the existing stock of gold in the United States, and an increase of such enormous amount in any one year would so cheapen gold in this country compared with commodities as to raise the gold prices of all commodities to a most extreme degree. In fact, the prices of American products can not be raised above the world's level of prices for the same products without checking exportation, and if it were possible to raise prices permanently above the world's level, the result would be a permanent loss of the export trade. An influx of gold from abroad, if it exceeds the proportionate share of the world's stock to which we are entitled on the basis of the world's level of prices, must raise American prices above the prices in other countries, and the only way in which goods could then be exported would be by selling them to foreigners at lower prices than those at which they are sold to our own people. Even this could not long continue if gold kept coming beyond our proportionate share, because wages and the prices of raw material would eventually rise so high as to force large losses upon exporters. The only extent to which gold can come to this country is the extent to which it is needed to bring gold prices of securities and products to a level with prices of the same securities and products in other gold-standard countries, and if it goes beyond this point the resulting check to exports will cause the gold to go back and the equilibrium to be restored. This is shown in the fact that the recent rise of prices in this country since 1897 was accompanied by a similar rise in Europe, since the new gold and the gold released from the Russian and Austro-Hungarian Government vaults spread through all countries according to the level of prices in each. The rise and fall of prices in leading gold-standard countries is shown in the following table and accompanying chart of index numbers, wherein the movements of wholesale prices in the United States, Great Britain, and Germany, respectively, are presented on the same basis. In each country, it will

Comparative movement of wholesale prices in the United States, Great Britain, and Germany, 1878 to 1901, average prices for 1879-89 being 100.[1]

Year.	United States.	Great Britain.	Germany.
1878-79	89	112	.....
1879-80	107	107	102
1880-81	107	114	110
1881-82	120	110	107
1882-83	111	108	104
1883-84	102	106	108
1884-85	94	95	99
1885-86	90	91	94
1886-87	90	88	97
1887-88	93	89	94
1888-89	94	93	97
1889-90	90	93	100
1890-91	95	93	106
1891-92	90	91	98
1892-93	90	87	95
1893-94	82	85	92
1894-95	81	79	83
1895-96	77	79	82
1896-97	73	79	82
1897-98	79	82	83
1898-99	77	84	84
1899-1900	90	93	100
1900-1901	88	94	.....

[1] Index numbers for the United States are compiled by Mr. John R. Commons. For Great Britain by Mr. Augustus Sauerbeck, London, published annually in Journal of the Royal Statistical Society. For Germany by Professor Conrad, published in Jahrbücher für National Oekonomie and Statistik, 1894, and following years. The index numbers for Great Britain, as originally compiled, are based on the prices for the years 1867-1877, but have been converted to the base of 1879-1889 for comparison. The index numbers for the United States are for the crop or fiscal year July 1 to June 30, while those for Germany are calendar years, and those for Great Britain are calendar years 1879 to 1883, and thereafter crop years.

Chart showing comparative movement of wholesale prices in the United States, Great Britain, and Germany, 1878 to 1901.



be noted, the general level of prices shows a rise in the period for 1879 to 1882, then a decline to 1885, a rise in 1890, a decline in 1896, and a rise in 1900. Such slight divergences as appear in the table are explained by the fact that the lists of staples are not identical, since the list includes 66 commodities for the United States, 42 for Great Britain, and 30 for Germany. Even with these divergences it is evident that with countries on the same monetary basis the causes affecting the general level of prices are international, and the movement of gold from one country to another takes place only in so far as necessary to maintain a corresponding level of prices in each. It is on this account that, although during the past five years, the total favorable balance of trade (including silver) amounted to $2,771,604,622, yet the total net imports of gold amounted to only $208,719,757. This leaves more than $2,500,000,000 of merchandise exports to be paid for by foreigners in other ways than by gold or foreign merchandise. The following table shows by years since 1894 the net exports of merchandise and the amount of gold received from abroad in payment therefor. In four of the eight years there were net exports of gold at the same time with net exports of merchandise.

Net exports and imports; merchandise and gold.

Year.	Net exports of merchandise (including silver).	Net exports, gold.	Net imports, gold.	Balance to be accounted for.
1894	$274,310,663	$4,528,942	.....	$278,839,605
1895	102,652,307	30,083,721	.....	132,736,028
1896	134,646,848	78,884,882	.....	213,531,730
1897	317,676,556	.....	$44,653,200	273,023,355
1898	639,610,134	.....	104,985,283	534,624,851
1899	556,518,812	.....	51,432,517	504,086,295
1900	565,997,871	3,693,575	.....	569,691,446
1901	692,301,150	.....	11,342,332	681,458,718

Various estimates have been made by different authorities in accounting for the large balances which appear in this table. First it is said that the indebtedness of the United States to the capitalists of foreign countries draws a large annual payment of interest from this country which is not counterbalanced by products or gold shipped in return. Plainly, if this indebtedness were large enough it would account for the entire balance. Debtor countries like Egypt and India pay a heavy tribute to Europe, and this appears in a large, permanent, favorable balance of trade. A recent estimate places the indebtedness of the United States to Europe on January 1, 1899, at $3,330,000,000, and the indebtedness of foreign countries to the United States at $500,-

000,000, leaving a net foreign debt of $2,830,000,000,[1] probably reduced to $2,000,000,000 by the end of 1900. Considering the much higher rate of return on our foreign investments than we pay to Europe, this writer estimates our annual interest tribute at not over $90,000,000. He also estimates the expenditure of Americans traveling abroad at $50,000,000 and the loss by expatriation of Americans who take up permanent residence abroad at $10,000,000. These estimates are probably the lowest that have been made by those who have inquired into the subject, and, furthermore, certain items like the investments of foreigners in American real estate, which must be very large, are omitted altogether. Traveling expenses of Americans abroad are estimated by others as high as $100,000,000 for each of the past two years, and the income from American property received by former Americans now living in Europe might equal or exceed the traveling expenses. In addition, foreigners residing in this country send large amounts of money to Europe, it being estimated that 65 per cent of the tickets of immigrants are paid for in this country, while foreigners returning to Europe or China take with them considerable sums. In

[1] N. T. Bacon ("American international indebtedness," Yale Review, November, 1900) gives the following approximate statement of our foreign indebtedness as of January 1, 1899, made after careful inquiries from banking houses in New York and Europe, not including real-estate investments, which the author considers small in amount:

The United States to—	
England, for investments	$2,500,000,000
Holland, for investments	240,000,000
Germany, for investments	200,000,000
Switzerland, for investments	75,000,000
France, for investments	50,000,000
Belgium, for investments	20,000,000
Rest of Europe, for investments	15,000,000
Cuba, for investments	30,000,000
Other American and Chinese, for investments	15,000,000
Life insurance (cash surrender value)	185,000,000
Total	3,330,000,000
Europe to the United States	10,000,000
Canada to the United States	150,000,000
Mexico to the United States	185,000,000
Cuba to the United States	50,000,000
Other Antilles to the United States	10,000,000
Latin America to the United States	45,000,000
Pacific China and Japan to the United States	5,000,000
Life insurance (guaranty investments) to the United States	45,000,000
Total	500,000,000
Debtor balance	2,830,000,000

Mr. Bacon estimates the debtor items in our national budget as follows:

Net interest	$90,000,000
Expenditures of Americans traveling	50,000,000
Loss by expatriation	10,000,000
Total	150,000,000

And adds that probably $200,000,000 would cover our annual outlay for these items.

all these items the field for speculation and guesswork is unusually wide. It is known, however, definitely, that in the past year American financiers for the first time came to the aid of European governments in the purchase of nearly $100,000,000 in municipal and national loans.

The following amounts are known to have been subscribed for in New York:

Government loans subscribed for in New York during 1900.

[Commercial and Financial Chronicle, January 5, 1901, p. 8.]

Date.	Government loans.	Amount.	Rate of interest.
Mar., 1900	British war loan	$12,000,000	3
Aug., 1900	British exchequer loan	28,000,000	3
Sept., 1900	German treasury notes	20,000,000	4
Do	Swedish government bonds	10,000,000	.....
Feb., 1900	Corporate and municipal loans, State of Jalisco, Mexico	2,500,000	.....
Do	Wladikawkas and Southeastern Railway of Russia	25,000,000	.....
	Total for 1900	95,500,000	.....

The "importation" of these loans, of course, served to offset American merchandise exports, exactly as would the importation of corresponding values of products or specie. In addition to the investments in Government loans, it is well known that American railroad and other securities have been purchased in large amounts in the European markets and brought to this country. Besides, American exporters have recently, to a considerable extent, allowed credits to stand abroad because better interest rates could thus be realized than by insisting on their immediate payment. Finally, the payment of freight charges on exports and imports is made to foreign owners of the merchant marine, and this amount is estimated variously at from $50,000,000 to $150,000,000 yearly. Undervaluations of imports are known to exist, and these are variously estimated by American merchants to amount to many millions of dollars. Altogether it is doubtless true that, taking into account these forms of payment and those undervaluations which do not appear in the commercial statistics, the imports of the United States balance the exports.

AGRICULTURE.

I. GENERAL SURVEY OF AMERICAN AGRICULTURE.

AGRICULTURAL PROSPERITY.

The following survey of agricultural conditions in the United States consists of (1) an analysis of the industrial facts developed by the testimony before the Industrial Commission or derived from other authentic sources; and (2) an examination of the more important phases of agricultural development, past and present, with special regard to their bearing on rural prosperity and governmental measures for promoting the same.

An examination of the facts presented by the testimony given before the Commission shows that the general condition of farming throughout the United States is prosperous as compared with conditions at different periods previous to and since the civil war. Throughout the central West it is stated that in most of the elements of agricultural prosperity the farmers are decidedly better off than at any previous period in our rural history. From certain portions of the South, including Maryland, South Carolina, North Carolina, and Texas, evidence is presented to show that the condition of farming is either of doubtful improvement or much depressed, but for the most part only in local sections. There is no considerable body of evidence to show that farmers have not shared more or less freely and fully in the general improvement of business since the depression of 1893. In fact the weight of evidence is to the effect that farm wealth has steadily advanced and debts declined. The mortgages of Kansas have been reduced to one-fifth of their amount of ten years ago, and the interest rate on the balance has been reduced one-third.

As evidence of the state of agriculture in general, possibly the condition of the older States is after all the best index to the national industry. If so, Pennsylvania might be taken as representative. Contrary to the prevailing impression that farm lands in the East have declined in value, it is officially stated by the secretary of agriculture of Pennsylvania that the price of improved farm land in that State has

advanced, and that there is no lack of tenants for farms that are at all favorably located and in good condition. Poor, run-down, or badly located farms are not wanted, and in the same class are poor, run-down, or ill-bred animals. The complaints of low prices and hard times among the farmers of that State, it is reported, come chiefly either from political discontent provoked by professional agitators, from the occupants of ill-conditioned farms, or from the owners of ill-bred and unprofitable stock. What is true of Pennsylvania is substantially true of the other Eastern States.

A further fact in this connection is the highly advanced state of agriculture, measured either by the returns which it affords to labor or by the extent to which it has enabled farmers to lay by a reserve of money. Reports of increase of farmers' bank accounts have been received from all sections of Pennsylvania as late as 1900, showing a marked improvement since 1895. Further inquiry shows that the debts of farmers are for the most part balances due upon farm improvements provided by them, and not for losses occasioned in the conduct of their business. Farm mortgages are being rapidly lifted, the farmer is enjoying a comfortable life for himself and family, and more children than ever before in the history of the State are being sent to the higher educational institutions.

A third feature of farming in Pennsylvania is seen in the rapidity with which scientific principles are being applied to the capable management of the business of farming. Farming as an occupation reduced to a science has in many localities passed beyond the capacity of men of ordinary ability. Under such circumstances the number of failures on land which offered first-class opportunities may have increased, but it is also true that a scientific class of farmers is being developed by the adoption of newer methods and better appliances. It is no longer possible for unwisely directed labor, or careless methods, to achieve the degree of success which superior knowledge and far-seeing management enjoys. Much, no doubt, of the distress in the agriculture of this State has come about through the necessary elimination of incompetent occupants of the soil through the painful method of bankruptcy, or by migration to take up the cruder and cheaper lands of the West.

AGRICULTURAL PROGRESS.

When we come to analyze the economic status of national agriculture from the standpoints of labor, of the availability of capital for rural development, of the progress of machinery in farming, and the condition of land, including its value and its methods of cultivation, it must be admitted that there has been extraordinary improvement, both in the economic means available for progressive agriculture and in the

methods which characterize improvements. In spite of this, however, it remains to be said that the old régime of cultivation, in which the minimum of attention is given to the soil, has not by any means ceased to characterize large sections of the country. It is true that in many States the progress of intensive cultivation has become decisive in determining the character of farming, but it is equally true that in many localities in most of the agricultural States the use of modern methods and systems of cultivation are hardly to be regarded as factors in the conditions of farming. One learns, for example, that the rotation of crops is but a recent feature in the farming of some of the oldest of the commonwealths east of the Mississippi. This principle of agriculture, which was known and in general practice in England over two hundred years ago, has not yet been utilized, or just begun to be utilized, in some of our oldest States.

It is not, however, fair to the facts to judge the general condition of American farming by the state of progress in backward localities. The truth is that throughout possibly the greater portion of the United States continuous cropping has practically reached its limit as a system of cultivation. Where that system still prevails, it is due largely to the remoteness of markets or the relative scarcity of labor and capital in contrast with the cheapness and abundance of land. Wherever it has ceased, it has been superseded by a systematic utilization of the waste materials of the farm, thereby giving evidence that the industry has passed out of an old into a new stage of development.

No other single feature of American farm values has advanced so rapidly as has the value of live stock. The growth of farms and farm property is given herewith in a statistical statement of the number of farms, their acreage, value, value of implements, and of live stock. The figures cover four decades, from 1850 to 1890, the census figures for 1900 not being available for the entire country.

Forty years' progress in farms and farm values.

	1850.	1860.	1870.	1880.	1890.
Farms.....number..	1,449,073	2,044,077	2,659,985	4,008,907	4,564,641
Farms.....acres..	293,560,614	407,212,538	407,735,041	536,081,835	623,218,619
Farms.....value..	$3,271,575,426	$6,645,045,007	$9,262,803,861	$10,197,096,776	[1]$13,279,252,649
Farm implements..do....	$151,587,638	$246,118,141	$336,878,429	$406,520,055	$494,247,467
Live stock .....do....	$544,180,516	$1,089,329,915	$1,525,276,457	$1,500,464,609	$2,208,767,573

[1] Land, fences, and buildings.

AGRICULTURAL RESOURCES OF THE UNITED STAT

The accompanying map, prepared for the summary of internal
merce, Bureau of Statistics, Treasury Department, presents at a gl
the national resources of the country in their relation to agricul

The internal commerce in the United States may be said t
carried on between six agricultural divisions on the basis of the s
industries which are fundamental in the prosperity of the diff
sections:

1. In New England, dairying, trucking, and mixed farming
received their fullest development, and the same may be said of
York and parts of the other Middle States. The entire North
including New England, New York, and the leading Middle State
also so largely engaged in manufacturing as to comprise what ma
called the industrial section of the United States. This group of S
is, therefore, closely dependent upon the rest of the country for
raw materials as the other farming sections supply.

2. The second division is conveniently designated as the Co
Belt, comprising all that country lying south of the thirty-sev
parallel of latitude and extending west as far as the western boun
of Texas. This whole territory is primarily dependent upon co
culture for its prosperity.

3. North of this territory, lying between the thirty-fifth and fo
third parallels of latitude and extending to the western boundarie
Kansas and Nebraska, lies the third staple section, which ma
called the Corn and Winter-Wheat Belt of the United States. Wi
this belt the production of live stock has also become a basic facto
agriculture.

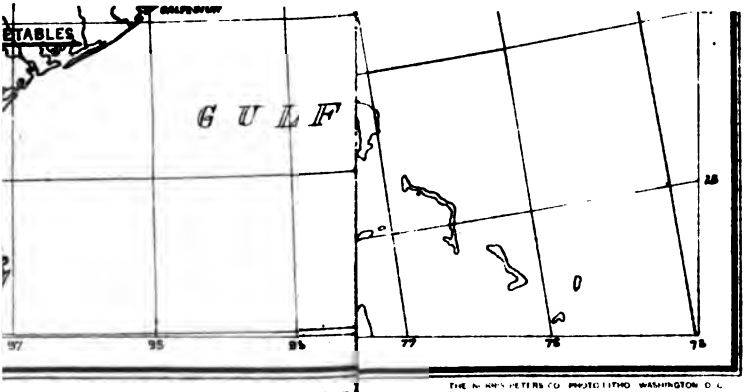
4. North of the forty-third parallel, extending westward from
Great Lakes to the eastern boundary of Montana and Wyoming,
the Spring-Wheat Belt.

5. The States and Territories usually known as the Rocky Moun
States and Territories, comprising Montana, Idaho, Wyoming,
orado, New Mexico, Arizona, Utah, and Nevada, are devoted to
production of wool and live stock as fundamental industries.

6. The Pacific-coast States of Washington, Oregon, and Califo
are still primarily agricultural. Wheat, barley, live stock, tim
and fruits constitute the sources of their prosperity.

This geographical grouping of agricultural activities lies at the b
of the internal commerce of the United States.

Under the present state of agricultural development no sectio
the country has reached such a degree of self-sufficiency as to be in
pendent of other sections, both for its means of subsistence and
materials of manufacture. Consequently the development of la
trade centers is dependent upon the accumulation of staples and t



PARTMENT, BUREAU OF STATISTIC

distribution to various consuming uses throughout the country and the rest of the world. Manufactures and merchandise contribute a comparatively minor portion of the total tonnage carried on the railroads of the country. The dividend-earning freight of Western railroads, for example, is found chiefly in the volume of grain and cattle shipments. The Southern railroads rely largely on cotton, lumber, fruits, and vegetables for their prosperity. Merchandise and manufactures are rather of the nature of a supplementary freight-earning business.

FORESTS.

Forestal resources of the United States are being rapidly reduced by the present method of cutting the timber to meet the commercial demand. Side by side with this tendency to exploit natural resources is the progress of scientific forestry, shown in the increase in systematic management of forests, in tree planting, and in the adaptation of trees to the varieties of soils throughout the country.

The timbered territory of the United States may be divided into six geographical divisions, each of which is more or less distinct from the others. In the order of the importance of their production they rank as follows:

1. The Lake region, where white pine and hemlock are the characteristic lumber products, embracing the States of Michigan, Minnenesota, Wisconsin, Iowa, Missouri, and Illinois.

2. The Southern region, of which the long-leaf and short-leaf pine and cypress may be regarded as the characteristic woods, together with the hard woods included in Virginia, the Carolinas, Georgia, Alabama, Florida, Mississippi, Texas, Indian Territory, Arkansas, Missouri, Tennessee, Kentucky, and West Virginia.

3. The New England and North Atlantic States, of which the spruce, the birch, and the hemlock of Maine, along with the pine, hickory, and oak of the Middle States, are characteristic.

4. The Central States, north of the Ohio and west of Pennsylvania, whose chief product is hard-wood lumber, found in Ohio, Indiana, and parts of Illinois.

5. The Pacific States, whose characteristic products are redwood, fir, cedar, and pine.

6. The Rocky Mountain States, where the most common species appears to be pine, though not unassociated with several other species of minor ocmmercial importance, such as aspen, cottonwood, and spruce.

Forests are to be regarded as related to agriculture in several vital ways. First, the regular supply of moisture in the atmosphere is very dependent on the proximity and density of forests, in the absence of which the rainfall flows off and leaves no reserve of moisture to ena-

ble the locality to resist drought. Hence, well-wooded localities are, in a sense, rendered proof against the lack of rain by which regions bare of forests would be parched. The economic value of forests to farming in this relation is not only not questioned, but the idea is embodied in the general policy of every European government.

PROGRESS IN AGRICULTURAL AND OTHER INDUSTRIES.

A succinct statement comparing agricultural progress with other phases of national growth since 1870 is given in the following table:

Progress of the United States in its finance, trade, and industries compared with agriculture.

	1870.	1880.	1890.	1895.	1900.	Per cent increase or decrease, 1870–1900 (+ or −).
Population	38,558,371	50,155,783	62,622,250	69,878,000	76,303,387	+98
Total farms	2,659,985	4,008,907	4,664,641	.....	5,700,000	+114
Railways in operation .....miles..	52,922	93,262	166,703	181,115	[1]190,883	+261
Tons of freight carried 1 mile.....	([2])	[3]39,302,209,249	79,192,985,125	88,567,770,801	[1]126,991,703,110	+223
Average freight rate per ton mile, cents..	1.94	1.17	.93	.84	[1].73	−62
Tonnage of vessels passing through Sault Ste. Marie Canal	690,826	1,734,890	8,454,435	16,806,781	22,315,834	+3,130
Wheat produced, bushels	235,884,700	498,549,868	399,262,000	467,102,947	522,229,505	+121
Corn produced, bushels	1,094,255,000	1,717,434,593	1,489,970,000	2,151,138,580	2,105,102,516	+92
Cotton produced, pounds.....	1,451,401,857	2,771,797,156	3,627,366,183	5,036,964,409	4,757,062,942	+228
Cotton (domestic) taken by mills, bales.....	857,000	1,795,000	2,325,000	2,871,000	3,644,000	+325
Coal produced..tons..	32,863,000	63,822,830	140,866,981	172,426,366	[1]238,877,182	+626
Petroleum..gallons..	185,262,672	836,394,132	1,466,867,546	2,072,469,672	2,396,975,700	+1,198
Pig iron produced, tons.....	1,665,179	3,835,191	9,202,703	9,446,308	13,789,242	+728
Steel produced..tons..	68,750	1,247,335	4,277,071	6,114,334	10,639,857	+15,376
Imports of manufactures of iron and steel .....dollars..	32,665,454	71,266,699	41,679,501	23,048,515	20,478,728	−37
Exports of manufactures of iron and steel .....dollars..	11,002,902	14,716,524	25,542,208	32,009,989	121,913,548	+1,008
Imports of raw silk for manufacturing, pounds.....	583,589	2,562,236	7,347,909	8,995,839	13,043,714	+2,135
Imports of crude rubber for manufacturing ....pounds..	9,624,098	16,826,099	33,842,374	39,741,607	49,377,138	+413
Exports of manufactures .....dollars..	68,279,764	102,856,015	151,102,376	183,595,743	433,854,756	+535
Exports of agricultural products, dollars	361,188,483	675,961,091	629,820,808	558,210,026	835,858,123	+132
Total exports, dollars	392,771,768	835,638,658	857,828,684	807,588,165	1,394,433,082	+256
Total imports..do....	435,958,408	667,954,746	789,310,409	731,969,965	849,941,184	+95
Total money in circulation ..dollars..	675,212,794	973,382,228	1,429,251,270	1,601,968,473	2,055,150,998	+204

[1] Preliminary data. [2] No data. [3] 1882.

AGRICULTURAL POPULATION.

The development and magnitude of agriculture in the United States as a whole may be exhibited by means of a few statistical tables showing progress in values, rural population, the number of farms and farm families, and the number of acres in farms for successive census years. The five tables given below have been prepared by Mr. L. G. Powers, chief statistician in charge of agriculture for the Twelfth Census, to show the progress of the Southern States especially, compared with the nation as a whole.

The table below gives 75,997,687 as the total population of the country in 1900, and 40,364,613 as the rural population, there having been an increase of rural population during the decade of 4,549,605, or 12.7 per cent, while the total population increased 21 per cent. The table shows furthermore that the gain in rural population has been much greater in the fourteen Southern States than in the Western and Northern States, the percentage of increase in the former being 17.4 and in the latter only 9.2.

An exhibit for the years 1890 and 1900 of the total population and of the rural population of fourteen Southern States and of the other States and Territories of the nation, together with the percentages of gain for each.

States and Territories.	Total population.		Per cent increase.	Rural population.		Per cent increase.
	1900.	1890.		1900.	1890.	
Alabama	1,828,697	1,513,017	20.8	1,508,605	1,274,097	+ 18.4
Arkansas	1,311,564	1,128,179	16.2	1,088,548	975,862	+ 10.2
Florida	528,542	391,422	35.0	367,841	278,798	+ 31.9
Georgia	2,216,331	1,837,353	20.6	1,676,113	1,450,391	+ 15.6
Kentucky	2,147,174	1,858,635	15.5	1,512,054	1,367,572	+ 11.5
Louisiana	1,381,625	1,118,587	23.5	948,611	773,075	+ 22.7
Maryland	1,190,050	1,042,390	14.2	541,734	481,179	+ 12.6
Mississippi	1,551,270	1,289,600	20.3	1,324,022	1,142,502	+ 15.8
North Carolina	1,893,810	1,617,947	17.1	1,555,185	1,400,288	+ 11.1
South Carolina	1,340,316	1,151,149	16.4	1,079,058	961,342	+ 12.2
Tennessee	2,020,616	1,767,518	14.3	1,617,437	1,402,922	+ 15.3
Texas	3,048,710	2,235,523	36.4	2,368,701	1,658,684	+ 42.8
Virginia	1,854,184	1,655,980	12.0	1,427,308	1,330,468	+ 7.3
West Virginia	958,800	762,794	25.5	758,067	630,380	+ 19.5
Southern States	23,271,689	19,370,094	20.1	17,768,279	15,127,555	+ 17.4
Northern and Western States	52,725,998	43,432,418	21.7	22,596,334	20,687,453	+ 9.2
Nation	75,997,687	62,802,512	21.0	40,364,613	35,815,008	+ 12.7

FOREIGNERS IN AMERICAN AGRICULTURE.

The overflow of foreign-born population in the cities has turned attention recently to the cultivation of land as a field for immigrants to the United States. Among the most successful nationalities are the Italians. Most of them, in southern Italy especially, have been trained in the methods of intensive agriculture. One drawback hitherto has been the absence of any village system of living on the part of the rural population of the United States, such as characterizes

agricultural society in Italy, Hungary, and through many portions of Germany and France. Where systematic efforts have been made under the colonizing principle, many communities of farmers have been established in the United States. Among these may be noted, first, the Italian colony at Vineland, N. J. These foreigners brought with them the knowledge of grape culture and wine manufacture; but afterwards, finding that truck farming and the cultivation of sweet potatoes were more profitable, the grape industry became a less important feature of the colony's activity.

Another colony of the same nationality, comprising about 500 persons, has flourished in Brazos County, Tex. There the industry is rice and truck farming. Throughout Texas there are many Italian cotton planters, as well as grape growers. In the Brazos County colony the inducement of cheap land was the cause of locating after the immigrants had finished work upon a local branch of a railroad, for the grading of which they had been imported. At Asti a colony of that name, on the cooperative plan, has been in very successful operation for fully 16 years. It is reported in the Italian Chamber of Commerce at San Francisco, that, of the 45,625 Italians living in 56 counties of California, almost all were engaged in agriculture; they owned 2,726 farm properties. In the vicinity of Denver and Pueblo, Colo., Salt Lake City, Utah, and Cheyenne, Wyo., truck farming has been quite generally in the hands of Italians. Likewise in the vicinity of New Orleans and at Memphis, Tenn., where there are 50 Italian truck farmers who emigrated from the valley of the Po, in northern Italy, and at Daphne, Baldwin County, Ala., there are regularly established sections or communities of foreigners engaged in agriculture. As a rule, the Italians take small tracts of land, and prefer to remain in close contact with neighbors of their own nationality. There are very few Italian farmers in the New England States.

Bohemians, though a rural people in Europe, have less frequently taken to the cultivation of the soil in the United States. The reasons assigned are, first, inadequate capital; second, cost of travel from the seaports to the interior, and, equally, the lonesomeness of farm life in comparison with the village life to which they have been accustomed in Bohemia. Bohemian farmers in individual households have, however, been very prosperous in Ohio, Nebraska, Texas, and Wisconsin. They rarely come as farm laborers, but are prepared to buy land and develop it. A Finnish colony has been located in Hickman County, Tenn., with satisfactory results.

Attempts at inducing the Jewish portion of the foreign population to engage in agriculture have not been generally successful. The most favorable example is that at Woodbine, in the southern portion of New Jersey, below Camden. Difficulties of clearing land, unsuit-

able soil for certain crops, the lack of capital, and absence of markets here made themselves felt, until it was found necessary to supplement agriculture by the smaller manufactures, at which the population might occupy itself. At the present time 40 per cent of the 1,400 people at Woodbine are engaged in agriculture and 60 per cent in other pursuits. Russo-Jewish farmers in Connecticut have been especially successful, first, because of their taking farms already in a fair state of cultivation, and, second, because of the favorable markets within easy reach. Likewise Jewish farmers have succeeded in the vicinity of New Brunswick, New Jersey, and other localities and adjacent cities clustered around the mouth of the Hudson.

In the several States foreign whites have made different degrees of progress and contributed variously to the agricultural development of the United States. A thriving colony of Swedes is established in a new township called New Sweden, in Aroostook County, Me. This started with 50 colonists directly from Sweden in 1870, and the community now numbers about 1,500 people of the most estimable character, residing in several townships of this county. Maine also has one or more small colonies of Finns, and a colony of Jews.[1] In New Hampshire the advertisement of the 32,000 so-called abandoned farms in 1890 led to the arrival of a number of foreigners who became farm owners. In Cheshire County, Polish labor is the main reliance. There are also some French Canadians. Vermont is represented by Canadian French, Swedes, Norwegians, and Poles, especially during haying and harvesting. Scandinavian labor usually comes from Sweden and Norway direct. Laborers are engaged through employment agencies at the immigration station, in some cases by groups of farmers who divide them up among themselves in the busy seasons.

In Massachusetts the Poles have come in very rapidly in the past ten years, especially in the Connecticut Valley. In the market gardens around Boston many French Canadians are employed. In the Cape section Portuguese are abandoning fishing and going onto the farms. In Rhode Island conditions are somewhat similar to those in eastern Massachusetts. In Connecticut the Irish of the second generation are farm owners, and the Italians, Swedes, and Poles perform field labor very satisfactorily. As a rule the Irish and Germans are among the independent farmers. In New York German and Dutch labor is quite common, while Poles, Swedes, Russians, and Hungarians are scattered in different sections. In New Jersey foreign farmers are mainly, as in Connecticut, Irish and German, while Italians are, as mentioned above, of increasing importance. In Pennsylvania the foreign population in agriculture is mainly German, but in the coal regions Poles, Irish, and Italians are gradually becoming a more

[1] Reports Industrial Commission, Vol. XV, pp. 517–518.

important element in agriculture. In Ohio the prevailing foreign element is still German, especially in southern Ohio, and a high standard of educational attainment is frequently found among them.

In Indiana German farmers are noted in the southern counties, though there are few of this nationality in northern Indiana. Foreign farm laborers through central Illinois are usually Germans, Danes, and Swedes of a highly intelligent class. In Michigan there are many colonies of foreigners. Among them are to be noted the Dutch, Finns, Danes, and Norwegians. Germans are scattered over the State in smaller groups, and there are many French Canadians who came in originally as lumbermen. The sugar-beet industry has led to the arrival of Germans, Polanders, and Russians, who prove themselves most efficient. In Wisconsin Germans and Scandinavians have proved more successful than the American born as farmers. Most of the foreigners are Germans and Norwegians. Land companies have been quick to recognize this and have made special offers to induce immigration.

Polish people have been settled in the northern counties of Michigan under land-company auspices. These people have been brought principally from Indiana and the mining regions of Illinois and Pennsylvania. Another land company at work in settling the land in northern Wisconsin has sent 71 families into a single county, most of which were gathered from Western towns and the coal regions of Pennsylvania. Wisconsin, it is said, probably contains a greater variety of foreign groups than any other American State. Many of these groups occupy whole townships and control the entire social policy of these communities. The Germans, for example, number 75 per cent of the population of Taylor County, 65 per cent of Dodge County, and 55 per cent of Buffalo County. The Bohemians constitute three-sevenths of the population of Kewaunee County.[1]

In Minnesota German farmers and farm laborers have been found to be most effective, but the various European nationalities are widely distributed, though not so numerously as in Wisconsin. Missouri includes among its foreign farmers Germans, Irish, Scandinavians, and French, representatives of which are found in many counties. In North Dakota foreign farmers are to be found in every agricultural county, representing as many as fourteen or fifteen different nationalities. In South Dakota conditions are very similar, especially in the northwestern part of the State. Foreign farmers and farm laborers are found everywhere in Kansas, Germans being most in evidence and Swedes next in order. In Ellis county it is said that more than one-half are foreigners, most of whom are Russians. A very large proportion of the land sales of the Union Pacific Railroad in this State was made to English, Swedish, Germans, and Russians.

[1] Reports Industrial Commission, Vol. XV, p. 538.

Nebraska shows a variety of highly prosperous foreign farmers. The railroad companies sold largely to Germans, Swedes, Bohemians, and Russian Germans. The sugar-beet companies and the cattle companies employ large numbers of foreigners. In the Southern States the superabundance of cheap, unskilled labor has militated against the foreigners getting a foothold in agriculture. This is probably one main reason, if not the chief reason, for the failure of foreign whites to seek agricultural opportunities in the South. Furthermore, the absence of cash payment for wages is another drawback. Delaware furnishes an instance of many Germans who began as farm laborers, but are now independent farmers. While negro labor is principally employed, Germans and Swedes and other foreigners are frequently preferred, but are not to be had in sufficient numbers.

In Maryland special efforts have been made to induce foreign whites to take up land. As a result of this policy many families of Germans, Dutch, and Swedes have settled there. Many who came as laborers in a few years acquired land of their own, and are now prosperous farmers. In Virginia some German and English farmers have settled in Albemarle County, which is a well-known fruit section. Italians are found in large trucking districts near Norfolk. German colonists have been successfully engaged in agriculture at Ridgeway, N. C., for the past seventeen years. A colony of some 40 families, which settled near Morganton, in the western part of that State, has, after many struggles, attained to a highly creditable degree of prosperity. In Mississippi foreign farmers are mainly Germans and Swedes, with a few Irish. In Louisiana German farmers are credited with having first cultivated rice for commercial purposes. In some of the southern parishes there are Germans, Italians, and Swedes engaged in farming, and Italians are numerous as farm laborers on large sugar plantations, to which they come annually during the busy season, both from Europe and from different parts of the United States.

In Texas the colonists located at Brunfels are especially remarkable in their influence over agriculture, inasmuch as in their methods of cultivation they have avoided the exhaustive system of farming and maintained the fertility of the soil as the fundamental principle of their farm policy. Much of the expansion in the trucking industry in the vicinity of San Antonio is due to these farmers. In Arkansas German farmers rank as first class. They have to be credited here with great skill as gardeners, truck farmers, and in diversified farming generally.

In Colorado Italians appear to be taking the lead in truck gardening in the vicinity of cities. In Arizona there are many Scandinavian farmers of considerable wealth. In Utah small farms, the feature of the State's agriculture, are owned by families that cultivate them. Many of these properties are in possession of English, German, Scandinavian, Swiss, and Dutch farmers, and here again the Italian

truck farmers are prominent in the vicinity of the leading cities of the State. In Oregon in certain localities two-thirds of the farmers are Germans, though other nationalities, such as Scandinavians, Swiss, Dutch, English, Scotch, and Irish, are to be found. Many who started poor are now independent. Farm labor is mostly foreign. In California Germans and Swedes are found widely distributed. In Eldorado County, Cal., foreign farmers are mostly Portuguese and engaged in fruit growing.

NEGROES.

The condition of the negroes immediately following the war was frequently deplorable. In Alabama they turned to lawlessness, and in eastern North Carolina a similar condition existed. Elsewhere, however, where the transition to free industry and the maintenance of municipal order characterized the community, no such conditions prevailed. The negro laborer of the present day, it is declared, seldom repudiates his debts. Their habit of congregating in the outskirts of cities and towns is frequently against their health and comfort such as was formerly enjoyed. In the Black Belt of Alabama negro tenants are preferred to white tenants, because they pay larger rents and are able to supply their own labor. Attempts to colonize negroes from the Black Belt are not regarded as beneficial to the colored people. As farm laborers and household servants they are generally satisfactory. In Kentucky 41.5 per cent of the agricultural labor is colored. In southern Maryland it is the principal element in the laboring class. In Alabama 50 per cent of the agricultural labor is colored. The movement of colored labor has been mainly toward the southwest.[1]

Among social tendencies peculiar to negro labor is the desire for an isolated habitation, constituting part of a suburban or village community. Mr. Hammond, of South Carolina, denies that education reduces the fidelity of the negro, and Mr. Nall, of Kentucky, looks upon the villages of negroes as hopeful centers of improvement. Among the young people there has been much ambitious effort, supported by their parents. In spite of the advice of such leaders as Booker T. Washington, the young negroes of talent take largely to the professions. Mr. Hale, who has extensively employed both white and negro labor, states that the capacity of negro children to learn is as great as that of white people under equal opportunities.

The negro in the South supplies most of the unskilled labor. The average colored family lives on much less than the white family in the same locality, and the unskilled rural laborer, in localities where negroes constitute the major proportion of the labor supply, is thereby excluded from selling his labor in that market.

[1] Reports Industrial Commission, Vol. X, pp. 802, 806, 824, 826, 878, 918, 919, 923–926.

WHY IMMIGRATION HAS NOT GONE SOUTH.

The low cost of unskilled negro labor has made it impossible for foreign or native whites to compete with the negroes in the same grade of work.

While in the North the great body of agricultural labor is still native white labor, in the South there is practically no opportunity for this kind of labor outside of ownership of lands cultivated by the owner, or in superintendence of negro labor under the direction of the white owner of the land. The experience of some whites at least tends to confirm the belief that a more general introduction of white farmers on a small scale, in order to furnish examples to would-be small landowners, has excellent possibilities in it for the colored population.

The responsibility for the failure of foreign whites to move southward can not be placed entirely upon the negro population. The fact in final analysis remains, that the attitude of many of the whites has not been favorable to the advent of any contingent which would alter the traditional relations of the two racial elements of the population. There has been a pride which resisted, if it did not resent, the idea of inviting foreigners to settle in the community. For example, the immigration committee of the Louisville Commercial Club reported in 1890 that "there has always been more or less a sentiment throughout this State against foreign immigration, and it has been necessary for this committee to educate the people and the whole press of the State to the fallacy of such ideas, and show them the importance of advertising to the world at large the many advantages and great mineral and timber wealth of our State, as well as her rich farming and grazing lands, and by this means endeavor to settle in our midst a class of people who, with their energy and capital, would join us in developing our resources."

ASIATICS.

An official bulletin from the Director of the Census states that there were on June 30, 1900, less than 90,000 Chinese in the United States. In 1890 there were 107,000. The actual reduction has been 17,675 since 1890 and 29,000 since 1880. Of the 89,800 Chinese still here, about 67,700 are in the States on the Pacific coast and the mountain Territories.[1]

[1] Representatives of labor interests have held that, notwithstanding the Twelfth Census figures, there are many more Chinamen in the United States to-day than there were ten years ago. In support of this belief they cite the fact that within the period since the taking of the Eleventh Census, Chinamen have opened laundries in almost every neighborhood in every city of the country; that they are more generally employed on the farms of the Pacific coast; that as railroad and mine laborers in the intermountain and Pacific Coast States their numbers have greatly increased; and that, fearing the Census enumerator's work had for its object the taxation of Chinamen or their deportation to China, they naturally evaded enumeration. American workingmen also believe that the Six Companies of San Francisco ordered the Chinamen to evade the enumerators so that the Twelfth Census would show a decrease in their numbers in this country.

The Japanese in the United States have increased in number from 2,039 in 1890 to 24,300 in 1900. They, too, are largely concentrated on the Pacific coast, where they have been in demand to work beet-sugar estates, in fruit growing, and other agricultural labor in which the seasonal demand regularly outruns the supply.

The expiration of the Chinese-exclusion act raises the question of the value of this class of labor in the agriculture of the Pacific coast. The sentiment of California seems to be in favor of the preservation of that restriction upon this species of foreign labor. The act expires May 1, 1902. The chief objection to the Chinese laborer appears to be that he does not spend in this country what he earns, and therefore does not contribute a normal measure of prosperity to trade and industry as a consumer. Another objection is that he renders a supply of white labor more or less impossible in the same locality or industry, and hence displaces a class of labor whose standard of living is much higher than his own. Finally, he shuts out unskilled labor of all the white races from localities in which he constitutes the main element of supply. His labor, however, is considered cheap, and his attention to his duties in agriculture, especially in fruit picking and beet farming in California, is not called into question.

The supply of agricultural labor in the United States has received three limitations by national statutes. First, in the prohibition of importation of slaves; second, in the exclusion of contract labor; and third, in the Chinese-exclusion act. The last two of these limitations have possibly applied mainly to other industries than agriculture, but to a great extent farming has been involved in this restriction of supply.

POPULATION OF HAWAII AND PORTO RICO.

The population of two of our insular possessions, the Hawaiian Islands and Porto Rico, is presented below. It is principally agricultural, as will be seen by reference to the tables.

The hired labor of the Hawaiian Islands is used chiefly upon the sugar plantations, demands for labor being small in comparison.

With the expansion of sugar production the demands for labor have increased. Originally the labor was done almost wholly by Hawaiians, but as the requirements increased, coupled with the objection of many Hawaiians to hire at regular labor, the leaders of the sugar industry were obliged to look elsewhere, and this led to the introduction of Asiatic and other labor. In the following table is presented a view of the total population and the numbers of each nationality engaged in sugar plantation labor:

Number and nationality of sugar-plantation laborers in Hawaii.

[From Report of Hawaiian Bureau of Immigration, December 31, 1899.]

Islands.	Hawaiian.	Portuguese.	Japanese.	Chinese.	South Sea islanders.	All others.	Total.
Hawaii	514	840	9,119	1,820	17	330	12,640
Maui	359	523	5,305	1,373	37	165	7,762
Molokai	30	21	698	2	.....	27	778
Lanai	7	6	348	43	4	1	409
Oahu	217	319	4,882	1,544	1	130	7,093
Kauai	199	444	5,292	1,197	20	153	7,305
Total, 1899	1,326	2,153	25,644	5,979	79	806	35,987
Total, 1898	1,482	2,064	16,786	7,200	68	979	28,579
Total, 1897	1,497	2,218	12,068	8,114	81	675	24,653
Total population, 1897	39,504	15,191	24,407	21,616	.....	8,302	109,020

The population of Porto Rico engaged in gainful occupations is divided among the five groups as shown in the following table, where similar proportions for Cuba and the United States are added:

Persons in gainful occupations in Porto Rico, Cuba, and the United States.

Class of occupation.	Number in Porto Rico.	Per cent in—		
		Porto Rico.	Cuba.	United States (1890).
Agriculture, fisheries, and mining	198,761	62.8	48.1	39.7
Domestic and personal service	64,819	20.5	22.8	19.2
Manufacturing and mechanical industries	26,515	8.4	14.9	22.4
Trade and transportation	24,076	7.6	12.8	14.6
Professional service	2,194	0.7	1.4	4.1
Total	316,365	100.0	100.0	100.0

The number of urban inhabitants in each department of Porto Rico, with the proportion it bears to the total population and the rural population of the department, is shown in the following table:

Department.	Total population.	Urban population (1,000 +).	Percentage urban.	Percentage rural.
Aguadilla	99,645	15,518	15.6	84.4
Arecibo	162,308	21,166	13	87
Bayamon	160,046	46,728	29.2	70.8
Guayama	111,986	26,829	24	76
Humacao	88,501	18,219	20.6	79.4
Mayaguez	127,566	29,463	23.1	76.9
Ponce	208,191	45,869	22.6	81.4
Total	953,243	203,792	21.4	88.6

MAGNITUDE OF THE AGRICULTURAL INDUSTRIES.

Returning again to farm statistics of the United States, Table II gives the increase in farms during the decade and shows the gain in farm families by 1900. According to these returns, there were 5,700,000 farms in the United States in 1900. The total number of farms scheduled was 5,781,988, which figures are subject to correction; hence this is an approximation, but, taking it as provisional, we have a gain of about 1,200,000 farms in the ten-year period since 1890. In this gain the Southern States have made the greater advances, in the number of both farms and of farm families. The South shows an increase of 33.2 per cent in farms and 24.9 per cent in farm families, compared with 22.3 per cent and 18.4 per cent, respectively, for the rest of the country.

An exhibit, for the year 1890, of the number of farms and farm families, and, for 1900, of the number of farm schedules reported to the Census Office, together with percentages of increase of the latter over the former.

States and Territories.	Farms (1890).	Farm families (1890).	Farm schedules (1900).	Percentage of increase of farm schedules over—	
				Farms (1890).	Farm families (1890).
Alabama	157,772	166,690	224,517	42.3	34.7
Arkansas	124,760	146,970	179,202	43.6	21.9
Florida	34,228	36,625	41,021	19.9	12
Georgia	171,071	175,688	225,522	31.8	28.4
Kentucky	179,264	188,560	236,978	32.2	25.1
Louisiana	69,294	79,705	116,135	67.6	45.8
Maryland	40,798	41,372	46,593	14.2	12.6
Mississippi	144,318	161,080	230,151	59.5	42.9
North Carolina	178,359	182,791	222,293	24.6	21.6
South Carolina	115,008	117,405	158,676	37.9	35.2
Tennessee	174,412	183,726	223,788	28.3	21.8
Texas	228,126	248,782	253,283	11	1.9
Virginia	127,600	132,790	170,106	33.3	28.1
West Virginia	72,773	76,157	93,756	28.9	23.1
The Southern States	1,817,783	1,938,341	2,422,021	33.2	24.9
The Northern and Western States	2,743,858	2,828,838	3,359,967	22.3	18.4
The nation	4,564,641	4,767,179	5,781,988	26.7	21.3

INCREASE OF CULTIVATED AREAS.

Progress in the reduction of territory to agricultural uses, especially the public domain, is presented in the following table. This phase of farm development occurred in all sections, and made its greatest advances during the twenty years from 1870 to 1890. It appears that from 1870 to 1880 both the number of farms and the improved acreage increased more than 50 per cent throughout the country taken as a whole, while the acreage incorporated into farms increased by nearly one-third. During the decade between 1880 and 1890 the rate of progress was only one-half as rapid, there being an increase of but slightly more than 25 per cent in the South, North, and West in

improved acreage, although this aspect of rural progress went on during this decade much more rapidly than that of the increase in either the number or the acreage of farms. The decade 1870 to 1880 was the era of incorporation of the public lands into farms, while that of 1880–1890 continued the transformation of farm lands into improved acreage. The figures are given herewith:

An exhibit for the years 1870, 1880, and 1890 of the number of farms, acres of farm lands, and acres of improved land in farms, together with percentages of gain for the specified decades.

Divisions and years.	Farms.	Per cent of increase.	Acres in farms.	Per cent of increase.	Improved acres in farms.	Per cent of increase.
Southern States:						
1870	877,276		188,492,303		60,595,385	
1880	1,521,893	73.5	233,811,395	24	85,217,512	40.6
1890	1,817,783	19.4	253,932,007	8.6	106,629,914	25.1
Northern and Western States:						
1870	1,782,709		219,242,736		128,335,714	
1880	2,487,014	39.5	302,270,440	37.8	199,553,590	55.4
1890	2,746,858	10.4	369,286,612	22.2	250,986,841	25.8
Nation:						
1870	2,659,985		407,735,041		188,921,099	
1880	4,008,907	50.7	536,081,835	31.5	284,771,042	50.7
1890	4,564,641	13	623,218,619	16.3	357,616,755	25.9

CAPITAL ENGAGED IN AGRICULTURE.

The invested capital represented in farming in the United States and its growth during the 20 years from 1870 to 1890 is exhibited in the next table. According to this table the total value of the three classes of rural property was, in 1890, $15,982,267,689. The total railroad capital of the country at that time, in the United States, was $9,437,420,000. Hence, if agricultural values be compared with this great economic interest, it is found to exceed the total capitalization of the railroad property of the country at the same date by over six and a half billion dollars. Put in another form, the agricultural capital was one and two-third times the railroad capitalization.

An exhibit for the years 1870, 1880, and 1890 of the value of farm lands and buildings, of farming implements and machinery, and of live stock upon farms, together with percentages of increase for the specified decades.

Divisions and years.	Land, fences, and buildings.	Per cent of increase.	Implements and machinery.	Per cent of increase.	Live stock.	Per cent of increase.
Southern States:						
1870	$1,248,284,390		[1]$48,879,965		[1]$305,745,102	
	1,560,355,488		61,099,956		382,181,377	
1880	1,832,907,771	46.8	75,859,366	55.2	359,986,683	17.7
1890	2,520,708,898	37.5	92,434,880	21.8	505,126,429	40.0
Northern and Western States.						
1870	[1]6,161,958,699		[1]220,622,778		[1]914,476,064	
	7,702,448,373		275,778,478		1,143,095,080	
1880	8,364,139,005	35.7	330,660,689	49.9	1,140,396,024	24.8
1890	10,758,548,751	28.7	401,812,587	21.5	1,708,641,144	49.4
The Nation:						
1870	[1]7,410,243,089		[1]269,502,743		[1]1,220,221,166	
	9,262,803,861		336,878,429		1,525,276,457	
1880	10,197,096,776	37.3	406,520,055	50.8	1,500,384,707	23.0
1890	13,279,252,649	30.2	494,247,467	24.3	2,208,767,573	47.2

[1] Value expressed in gold; one-fifth less than currency value.

INCREASED PRODUCTIVITY OF AGRICULTURE.

Growth in the value of farm products for the period 1870 to 1890 is exhibited below. It appears that the increase by decades is about one-third; that is, in ten years the total value of farm products has been augmenting approximately at the rate of 33⅓ per cent.

An exhibit for the years 1870, 1880, and 1890 of the value of all farm resources, together with percentages of gain for the specified decades.

Year.	Southern States.		Northern and Western States.		Nation.	
	Total farm values.	Per cent of increase.	Total farm values.	Per cent of increase.	Total farm values.	Per cent of increase.
1870	[1]$1,602,909,457		[1]$7,297,057,541		[1]$8,899,966,998	
	2,008,636,821		9,121,321,926		11,124,958,747	
1880	2,268,753,820	41.5	9,835,247,718	34.7	12,104,001,538	36.1
1890	3,118,269,207	37.4	12,863,998,482	30.8	15,982,267,689	32.0

[1] Value expressed in gold; one-fifth less than currency value.

II. LEADING PHASES OF AGRICULTURAL DEVELOPMENT.

The existing conditions which prevail in American agriculture are the outcome of a rapid development of the natural resources by a rural population which has always, in practice and generally in policy since the time of Alexander Hamilton, kept itself in more or less vital relation with the other phases of the nation's economic evolution.

The varied development of American agriculture is ascribed to differences in climate, soil, and institutions, as well as greater or less facility for reaching markets. Climatic conditions, for example, define the limits of the cotton industry, rice, cane-sugar, and wheat culture, and give these industries a natural monopoly.

Scientific research has made many contributions to farming progress. The development of any country or locality, within climatic limitation, is dependent not only on the soil, but equally so on the adaptability of the soil to receive plants by introduction from other localities or countries. Science has led in this respect to the realization of vast possibilities. Nearly all of the fruit development in California has been the result of this commercial introduction of plants not native to that soil. In fact, almost the whole category of important crops is made up of plants which have had such introduction. With the exception of a few grapes, grasses, and some forage plants, every crop required for the manifold needs of a diversified farming industry and grown on a commercial scale in the United States has been introduced from foreign countries.

CEREAL CULTURE.

In the United States, according to the Crop Reporter of the Department of Agriculture, corn is always first of the domestic crops in total value. From 1879 to 1900 its total annual value, based on the farm price December 1 of each year, has ranged between about $500,000,000 and $750,000,000, once only having fallen below the smaller amount, while five times it has exceeded the larger. The second place has been usually held by hay, the total annual value of the crop since 1879 ranging between $330,000,000 and $494,000,000, with a single exception in 1893, when it attained to upward of $570,000,000. The total annual value of the wheat crop since 1879 has ranged from $213,000,000 to $497,000,000, surpassing the hay crop in value only during the years from 1879 to 1882, and again in 1891 and 1897, when failures in the European wheat supply brought the price of that cereal for a time to an extraordinarily high level.

Cotton in some years contends for the ascendency with wheat, having exceeded the latter staple in total value 10 years out of 35, to wit, in 1869, 1870, 1872, 1887, 1889, 1890, 1893, 1894, 1895, and 1900. The three years 1893, 1894, and 1895 will be remembered as a period of exceptional depression in wheat prices, and 1900 as a year of remarkably high prices for cotton. The total annual value of the cotton crop since 1879 has ranged from $242,000,000 to $339,000,000, the lower value occurring in 1879 and the higher in 1900.

Our four most valuable crops are those named (oats never rising or falling from the fifth place or potatoes from the sixth), in their order of total value, corn and hay in general coming first, wheat and cotton afterwards.

COTTON INDUSTRY.

The exclusive attention of the South to cotton production was stimulated by the high price of cotton immediately following the war. Other products yield by no means so profitable a return as cotton, and consequently pork and corn were neglected. The fall in the price of cotton forced the raising of corn and meat upon the farmers of the South to some extent. Nevertheless the attempt to restrict the production of cotton by conventions of planters has never accomplished anything in that direction. In Georgia, in the vicinity of Augusta, a more favorable practice has obtained of raising about 20 acres of cotton, 15 of corn, and 5 of other crops.

While this limitation in cotton acreage has been going on by introduction of other crops in the Atlantic and Gulf cotton States, the seat of cotton culture has gradually been moving southwestward.

Comparison below for a series of years shows that, with the exception of the year 1900, Texas has steadily increased and each of the other sections decreased its proportionate contribution. The table of bales received from these three geographical sources for five years follows, from the New Orleans Cotton Exchange:

Geographical sources of the cotton crop.

Source.	1896-97.	1897-98.	1898-99.	1899-1900.	1900-1901.
	Bales.	*Bales.*	*Bales.*	*Bales.*	*Bales.*
Texas	2,248,000	3,075,000	3,555,000	2,591,000	3,809,000
Other Gulf States	2,831,000	3,774,000	3,360,000	2,960,000	2,781,000
Atlantic States	3,679,000	4,351,000	4,360,000	3,885,000	3,793,000
Total	8,758,000	11,200,000	11,275,000	9,436,000	10,383,000

Acreage in cotton in this country continues to expand with the increase in the world's demand, and comparatively little success has been achieved in the effort to find another and cheaper source of supply. Texas alone now produces more cotton than all of the rest of the world outside of the United States. Judging by past attempts to displace American cotton, the South is better adapted to cotton production than any other known territory. The staple can be more profitably grown in the South than anywhere else, and in obedience to economic law the Southern States will for some time probably continue to furnish the world's supply. A rise of a cent or two a pound will bring back into cotton growing a very large acreage now outside of profitable cultivation.

The following statement, in support of testimony taken, gives the estimated acreage of cotton planted in 1900 and in 1901, and the estimated acreage harvested in 1900:

Estimated acreage in the United States.

States and Territories.	Estimated acreage of cotton.		
	Planted in 1900.	Harvested in 1900.	Planted in 1901.
Virginia	44,000	44,000	52,000
North Carolina	1,342,000	1,342,000	1,476,000
South Carolina	2,367,000	2,367,000	2,533,000
Georgia	3,551,000	3,551,000	3,870,000
Florida	169,000	169,000	186,000
Alabama	3,085,000	2,998,000	3,362,000
Mississippi	3,063,000	2,896,000	3,124,000
Louisiana	1,285,000	1,285,000	1,401,000
Texas	7,174,000	7,041,000	7,748,000
Arkansas	1,899,000	1,899,000	2,089,000
Tennessee	801,000	801,000	913,000
Missouri	58,000	58,000	59,000
Oklahoma	246,000	246,000	308,000
Indian Territory	344,000	344,000	413,000
Total	25,421,000	25,084,000	27,532,000

American cotton has nothing to fear from the Chinese crop, which it has gradually driven out of European markets. Various authori-

ties anticipate that our coming competitor in cotton production is Russia. In round numbers, about 25,000,000 acres (1900) are devoted to cotton in the United States, compared with about 9,000,000 in Russia. During the period from 1890 to 1893 the fall of price in cotton reduced the area of cultivation throughout the world, except in Russia and in Egypt, in both of which countries production increased, owing to the peculiar conditions of promotion in each case.

COST OF PRODUCTION.

Fall in price has forced a reduced cost of production of cotton. On account of this necessity, mainly, the geographical area of production was shifted southwestward into Texas, where new and fertile lands at (comparatively) low prices were to be had, making it possible to produce cotton at a 5-cent cost. Under this condition of low prices the older cotton sections held on to this industry long after the limits of profitable cultivation had been reached. Mr. Hammond estimates the cost of growing cotton in the Pee Dee region in 1848 at 4.7 cents per pound, including interest on capitalization. In 1886 the cost of production averaged 8.28 cents in the same region, and $5.88 per hundred was the minimum of cost without any profit, in 1901, in South Carolina and Texas. There can be little doubt, according to testimony on conditions generally, in this as well as in other countries, that the maximum of safe cost in growing is in the vicinity of 9 to 11 cents a pound. The large crops that have been grown at much lower prices have been grown under the artificial stimulation of a ruinous credit system. Other property has been swallowed up to maintain the growing of cotton. The desertion of houses on tenanted tracts, the loss of live stock, and shrinkage of other agricultural values are cited as proofs of the statement that cotton in some sections, especially at low prices, has proved a drain on the economic strength of the farm.[1] In Georgia it is claimed that the cost of cultivation is about the same now as 40 years ago, but that there has been some improvement in methods of cultivation, thereby in effect reducing the cost of production, though slightly. On the contrary, it is claimed that in Tennessee the cost of producing cotton has materially fallen by improved methods and reduced price of labor.

The same witness estimates the cost of producing at $22 an acre, for two-thirds of a bale of cotton. He considers that cotton can not be profitably raised for 5 cents a pound. Where it has been continued at this price deterioration of plantations has resulted. It is seriously doubted whether even in the Mississippi bottoms cotton can be raised at 5 cents a pound. In the vicinity of Memphis 5 cents a pound was placed as the limit without profit in 1897, but rise of prices of labor

[1] Reports Industrial Commission, Vol. X, pp. 827, 833, 838.

and provisions since then has made production unprofitable at that market value. In the Delta the cost of production is less than in the hill country, but the cost of living and operating a plantation is apparently greater. The cost in Mississsippi is placed by Mr. Kyle at from 4 to 5 cents where the price of animals and implements is low, but no profit can be derived at that price with the increasing cost of the plantation's equipment. With the prevailing rate of wages (March, 1900) the same view is confirmed by others. It is frequently alleged that wages are out of proportion to the price received for cotton.

When the price of cotton rose to 7 and 8 cents late in 1899, the farmer, who had incurred prior obligations requiring early marketing, failed to profit by the rise in price. Mr. Redding, of Georgia, estimates that not more than 15 or 20 per cent of the farmers were able to hold their crop.[1] Mr. Kyle estimates that as a rule 25 per cent of the Mississippi tenants are obliged to sell their crop immediately, and Mr. Peake, of Georgia, puts the figure at 90 per cent. In North Carolina the practice of holding cotton for a rise is more general, and the price paid by the mills is an object of closer attention on the part of farmers. The Cotton Growers' Association, by advancing money, has sought to enable the farmers to hold their crop for improved prices. In Georgia not one in 10 farmers is able to hold his cotton. The small tenant farmer must necessarily realize early.

PROGRESS OF SOUTHERN CONSUMPTION.

During the cotton year just closed Southern mills consumed 45 per cent of the American cotton taken by the mills of this country, according to the Manufacturers' Record. Ten years ago they consumed but 23 per cent. Their progress in a decade is marked by the following table:

Consumption of cotton by Southern and Northern mills, 1892–1901.

Year ended August 31—	Southern mills.	Northern mills.	Total.
	Bales.	*Bales.*	*Bales.*
1892	686,080	2,190,766	2,876,846
1893	743,848	1,687,286	2,431,134
1894	718,515	1,601,173	2,319,688
1895	862,838	2,083,839	2,946,677
1896	904,701	1,600,271	2,504,972
1897	1,042,671	1,804,680	2,847,351
1898	1,281,841	2,211,740	3,443,581
1899	1,399,399	2,190,095	3,589,494
1900	1,597,112	2,068,300	3,665,412
1901	1,620,931	1,966,897	3,587,828

In this matter of consumption the South is playing each year a more prominent part by the construction of new mills and the increase in the number of its spindles and looms. The Textile World brings the fig-

[1] Reports Industrial Commission, Vol. X, p. 444.

ures up to September 1, 1901, and gives the following as the number of cotton mills in the South and their equipment in spindles and looms:

Number and equipment of cotton mills in the Southern States.

States.	Number of mills.	Spindles.	Looms.
North Carolina	234	1,620,905	36,129
South Carolina	121	1,931,304	55,732
Georgia	144	1,271,188	31,632
Alabama	62	688,132	11,127
Tennessee	34	209,086	4,519
Virginia	15	164,499	5,363
Maryland	20	178,184	3,563
Mississippi	17	141,920	3,574
Louisiana	11	73,575	1,761
Texas	17	103,004	2,542
Kentucky	7	68,342	992
Arkansas	4	17,600	281
Grand total	686	6,467,709	157,212

The United States Department of Agriculture reports that the number of new mills completed in 1900 was 139, that the number in operation was 500, consuming 1,570,998 bales of cotton, and that the increase in the amount of cotton purchased by the mills in the Southern States in 1900 over that in 1899 was: Alabama, 33,713 bales; Georgia, 36,775 bales; Kentucky, 561; Missouri, 703; North Carolina, 67,617; South Carolina, 23,378, and Virginia, 93 bales; total net increase, 157,070 bales. The decrease by States is: Arkansas, 894; Louisiana, 3,054; Mississippi, 210; Tennessee, 1,476, and Texas, 288 bales.

TOBACCO.

To-day the United States is the world's leading tobacco producer. Other countries are now studying our soils, methods, and climate, with a view to producing a competing type of product for the European market. It has recently been proved that both in Florida and Connecticut a perfect substitute for the Sumatra leaf can be produced. Florida and Texas have both produced from Cuban seed a leaf identical in appearance, if not quite of the same flavor, as the Cuban leaf. The position of American tobacco in the markets of the world may be inferred from the fact that at the Paris Exposition it received the full limit of merits and was awarded the grand prize.

Tobacco culture has firmly established itself in the South, in the West, and in New England and the Middle States, especially in Pennsylvania. In the South Atlantic States tobacco has been displacing cotton quite rapidly in some localities, as eastern North Carolina, resulting in the opening of new markets at such places as Kinston, Wilson, and Tarboro, and at Mullins, S. C. This change came about from the necessity of substituting a new crop for cotton, the low price of which had made its cultivation unprofitable. The same tendency to

extend the tobacco acreage has been manifested in the cotton States farther south. As a step in diversification this development is of more than usual value. With tobacco culture the demand for commercial fertilizers has grown; inasmuch, therefore, as the crop yields nothing in the nature of a by-product to replace its drain on the soil, as cotton does, even this development has it drawbacks.

The extent of development west of the mountains in the Southern States may be indicated by sales in that region.

Leaf-tobacco receipts at Southern markets.

[From the Treasury Bureau of Statistics.]

Markets.	September—		Nine months ending September—	
	1900.	1901.	1900.	1901.
	Hhds.	*Hhds.*	*Hhds.*	*Hhds.*
Louisville	2,836	8,357	85,683	111,674
Cincinnati	3,497	7,024	50,697	58,616
Clarksville	91	532	19,588	21,757
Hopkinsville	22	414	12,476	12,090
Paducah	43	276	9,723	7,070
Nashville	.....	.....	1,933	.....
Mayfield	14	169	9,780	8,501
Total	6,503	16,272	189,880	214,715

Sales at Richmond, Va., were 7,474,000 pounds in 1900–1901; at Durham, N. C., 9,989,000 pounds; at Winston, N. C., 21,380,012 pounds, and at Danville, Va., 54,107,580 pounds.

MANUFACTURE OF TOBACCO.

The relation of tobacco culture to tobacco manufacturing has been made of great advantage to agriculture. In the South and in Pennsylvania the raw material is extensively worked up into the manufactured form in the locality in which it is raised. This feature brings farming and manufacturing into a normal unity of interest by utilizing the farm labor in the winter season for cigar manufacturing, assorting, and other processes of preparing the leaf for the trade or for consumption. In any question of change of national policy toward the importing interests this fact should be regarded as of primary importance, from the standpoint of agriculture.

RICE.

Rice has been produced in the United States for nearly three centuries, but only of late years has it reached much development.

During the past ten years 20,000 persons from the North and West have been attracted by the demonstration of the fact that irrigation, in conjunction with methods successfully applied years ago to wheat growing in the prairie States, would make rice growing equally suc-

cessful. The result is the existence of a practically new industry in Louisiana and Texas, with a capital of $5,000,000 invested in 100 canals, 1,500 miles in extent, now capable, under present water conditions, of flooding 300,000 acres, and increasing each year.

Dan Talmage's Sons' provisional estimate of the 1900 rice crop of the United States, as compared with the final estimate for 1899, is as follows:

Rice crop of the United States, 1899 and 1900.

States.	1899.	1900.
	Pounds.	*Pounds.*
North Carolina	3,125,000	3,750,000
South Carolina	29,093,100	34,500,000
Georgia	6,900,000	7,500,000
Louisiana	180,160,000	240,000,000
Total	219,278,100	285,750,000

The rice acreage in Texas for this season (1901) is reported to be four times as large as a year ago. The largest increase has been in the vicinity of Beaumont.

CONSUMPTION, PRODUCTION, AND IMPORTATION.

The average yearly consumption of cleaned rice in the United States for the past ten years has been not far from 250,000,000 pounds, and the average production about 150,000,000 pounds, leaving a net annual average of about 100,000,000 pounds to be supplied by importation. In the last year of the decade, however, there were indications of a decided increase in both domestic consumption and production, and also of a significant lessening in the difference between them. Apparently the consumption of rice in the fiscal year ended June 30, 1900, amounted to upward of 275,000,000 pounds; the production in the same year was about 220,000,000 pounds, or in the fiscal year 1899–1900 the production of rice in the United States was only about 55,000,000 pounds short of supplying the domestic needs.

Production, imports, exports, and consumption of rice in the United States.

Year.	Marketed production, year ended August 30.	Imports, year ended June 30.	Total production and imports.	Total exports.	Approximate consumption.[1]
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
1891	136,800,000	133,104,063	269,904,063	8,660,194	261,243,869
1892	155,665,800	85,112,164	240,777,964	10,577,423	230,200,541
1893	237,546,900	81,031,944	318,578,844	11,568,064	307,010,780
1894	122,865,160	86,810,536	209,675,696	12,640,678	197,035,018
1895	109,820,800	141,301,411	251,122,211	10,395,653	240,726,558
1896	168,685,440	78,190,334	246,875,774	14,966,342	231,909,432
1897	96,886,400	133,939,930	230,826,330	11,994,922	218,831,408
1898	116,301,760	129,810,630	246,112,390	10,942,840	235,169,550
1899	136,990,720	153,837,026	290,827,746	19,967,402	270,860,344
1900	219,278,200	93,648,451	312,926,651	31,214,696	281,711,965

[1] Excess of production and imports over exports. Estimates of production are from Dan Talmage's Sons Company, New York.

The cultivation of rice in the Hawaiian Islands has for ten years past been rapidly decreasing. Imports into the United States from those islands have fallen from 10,730,000 pounds in 1890 to 596,100 pounds in 1900.

DAIRYING INDUSTRIES.

Reduced to their simplest terms, the facts on this subject show that the development of dairying has been one of the redeeming features of American agriculture. Much progress has been made in the acceptance by the producing sections of commercial standards of dairy products. Elgin butter, for example, was formerly confined to a small section of country west of Chicago. Ten years ago much of the butter made in Minnesota was sent to Elgin to be sold under that name; but now Minnesota butter has won for itself a national reputation for quality, the dairy interests have prospered enormously, and the whole character of farming has changed therewith. Among the leading influences which dairying has had on the development of American farming may, therefore, be mentioned:

1. The adjustment of farm production to recognized commercial standards. No invention has done more to improve commercial methods in the dairying industry than the Babcock test, by which the butter value of milk furnished to the creamery can be easily tested and the producer given the true value of the milk on the basis of quality.

2. The maintenance of prices of farm products when cereals fall in value.

3. The utilization of feed to greater advantage in the maintenance of milk-producing animals at a profit.

4. Dairy farming preserves and builds up the fertility of the soil. In 1870, Jefferson County, Wis., had reached its lowest ebb agriculturally. Grain farming had exhausted or reduced the fertility of the soil to a ruinous degree, the average yield being 8 bushels of wheat to the acre. Farms were mortgaged for 60 per cent of their assessed value. Dairying was then introduced. Now this county has nearly 100 creameries, which make 7,000,000 pounds of butter a year. The fertility of the land has increased to such an extent that its average yield is now 21 bushels of wheat to the acre.

(5) Dairying furthermore develops a superior breed in stock, improves the standard of intelligence in the farming country, and increases the regular cash resources of the locality devoted to the industry. The State Board of Agriculture and other State authorities estimate that Missouri yields from $21,000,000 to $35,000,000 in dairy products each year. Iowa ranks among the first of the Western dairying States, and in 1890 produced 10.4 per cent of the country's output of butter. In 1899 this State shipped 91,683,184 pounds, com-

pared with 71,225,793 pounds in 1890. Kansas and Nebraska have progressed even more rapidly in this respect.[1] In the East dairying is a long established feature of agriculture, both in New England and in the Middle States. The South is still backward, but improving rapidly.

BUTTER AND CHEESE—THE MILK SUPPLY OF CITIES.

The problems connected with dairying may be divided into two groups: First, those of butter and cheese making, in which farming and manufacturing meet, so to speak. This group of problems is concerned with the question of which system of butter and cheese making is best adapted to any given locality or any particular farm; that is, whether the creamery, the skimming station, or the farm dairy is best suited to the production of these articles for market.

The other group of problems relates to milk production for cities. Here, also, there are these leading questions: The milk standard, the tuberculosis test, and the question of prices as between producers and distributers in cities.

The production of a milk supply for large cities has brought to light several problems peculiar to this phase of dairying.

1. Demands have increased enormously with the growth of population. The problem raised by this increase was that of the monopoly of the near-by producer.

The solution of this problem came by the introduction of refrigerator cars, whereby the area of supply was indefinitely widened.

2. This gave rise to a second problem—that of adjusting the supply and the price between country producers and city distributers. During the summer the surplus milk supply depresses the price and perplexes the distributers to dispose of the milk without its spoiling. The practice of scaling the price to reduce supply has not worked well, and the efforts on the part of the producers to reduce the supply sent to cities has made it necessary to restrict production or to utilize the milk in butter or cheese making, or in condensing.

Dairying within twenty years or more has grown from a local to a national industry. Nearly all sections of the country produce some butter and cheese for distant markets at home or abroad. This phase of farming is least developed in the South. Its earliest development on an extensive scale was achieved in the State of New York. Later the industry spread to Ohio, Michigan, Illinois, Indiana, and Wisconsin, and thence beyond the Mississippi until Iowa, Kansas, Nebraska, and Missouri acquired prominence among the dairying sections of the Union. Now these latter States have regular commercial connections with the South, the East, and with Europe for the sale of dairy products.

[1] Reports Industrial Commission, Vol. VI, pp. 268–296.

The milk supply of large cities as to which reports were obtained seems to be provided with little dissatisfaction on the part of producers, distributers, or consumers. In the evidence bearing on this industry it has been shown that it is in a prosperous condition, as a rule, with the exception of the producers of milk for the New York and Boston markets. The organized producers for the New York City supply, represented in the Five States Milk Producers' Association, have complained that the producer receives altogether too small a proportion of what the consumer pays. Its distributers in New York City, who supply the consumers, have been represented in the New York Milk Exchange. The exchange price is usually the standard wholesale price based on the freight rate of 26 cents per can of 40 quarts. In the course of the year 1898, the monthly average price per quart varied from 1.75 cents in June to 3.25 cents in December. This apparent price, being subject to station charges and freight rate, is larger than the actual net price paid producers.

According to the Five State Association's system, the net price for the year 1898 ranged from 1.25 cents per quart in June to 2.50 cents in December in Zone I, which is the zone of the 26-cent freight rate. It has been repeatedly claimed by the producers that the shipment of milk to the New York market at this rate resulted in production at a loss. Failure to convince the Milk Exchange that a high wholesale price was necessary to command a sufficient supply, something that seemed like a strike on the part of the associated producers was inaugurated, with the effect of improving prices to some extent for the immediately ensuing season. A more permanent policy, however, on the part of the producers consisted in the establishment of butter and cheese manufactories. This plan has resulted in a large increase in the number of condensaries, creameries, and cheese-making establishments throughout southeastern New York and adjacent portions of Pennsylvania and New Jersey. It has been found, nevertheless, that even this change does not fully exempt the Eastern producer from competition. The development of dairying in the West has reached such proportions that States like Nebraska, Kansas, and Iowa, as well as Michigan, are by this time full-fledged competitors of New York.

DAIRYING IN THE WEST.

The strength of the Western dairy interests may be gathered from the following table, showing the investment in a single State.

The total value of the investment of the State of Missouri in dairying, including the farm lands, cattle, and fixtures, as well as the factories, is reported below:

Value and gross receipts of creameries, dairies, and cheese factories in Missouri.

[From the Monthly Bulletin of the Missouri State Board of Agriculture, No. 1, April, 1901.]

Items.	Value, including lands, cattle, and factory plant.	Annual receipts, gross.
Creameries (720)	$85,860,000	$19,600,000
Farm dairies	80,075,000	15,100,000
Cheese factories (50)	3,725,000	475,000
Total	169,660,000	35,175,000

The competition between the East and the West is a fixed feature of the trade. The receipts of Eastern butter at New York, which means largely New York butter, in 1897 amounted to 14,686,560 pounds, and the receipts of Western butter amounted to 98,233,750 pounds, showing that 87 per cent of the total receipts were from Western sources. This proportion has been steadily growing since 1882. As a rule the price of Western butter of similar standard grade is but 1 cent less than that of Eastern butter. In cheese making the receipts from Eastern sources for the same year were 66,598,300 pounds, and from Western sources 5,699,080 pounds, showing that 7.8 per cent only of the New York receipts were from Western sources. The price of Western cheese, like that of butter, is usually a cent lower than that of Eastern cheese. From this it appears that the production of cheese is the more favorable form into which to convert the commercial milk supply of the East.

THE MILK SUPPLY OF NEW YORK.

The progress of milk production may be measured by the yearly receipts at New York, as reported for a series of six years, in cans of 40 quarts each:

Receipts of milk at New York City, 1895–1900.

[From the Milk Reporter, Essex, N. J.]

	1895.	1896.	1897.	1898.	1899.	1900.
Total receipts .....cans..	8,027,040	8,295,616	8,628,043	9,187,127	9,489,136	9,811,692
Daily average .....do...	21,992	22,666	23,338	25,170	25,998	26,881

The rate of increase from 1895 to 1900, inclusive, was 22.2 per cent.

These figures include cream and bottled milk, the latter of which is becoming a rapidly increasing feature of the business.

THE LIVE-STOCK INDUSTRY.

The live-stock industry of the United States is primarily Western in location, though it is reestablishing itself for meat production throughout the East, owing to the high price of meat. The leading pork and packing establishments are located in the Mississippi Valley; the main sources of cattle supply are west of the Mississippi, and the same may be said of hogs and sheep. The corn belt is the basis of the hog-producing industry, and cattle growing has become more and more a question of corn supply. Sheep raising is based on the availability of pasturage, and has therefore been located in the Upper Rocky Mountain States. From these areas the commercial movement is almost wholly northward and eastward to the great slaughtering centers on the Missouri River and at Chicago. In 1900 the five prominent packing centers—Kansas City, Chicago, Omaha, St. Louis, and St. Joseph—received 7,615,726 cattle, 16,872,640 hogs, and 6,492,563 sheep. The following table gives the receipts annually since 1884 at these five markets:

Receipts of cattle, hogs, and sheep at five Western markets.

[From the Kansas City Drovers' Telegram.]

Year.	Cattle.	Hogs.	Sheep.
1884	2,778,690	8,157,243	1,331,460
1885	2,838,010	10,572,666	1,490,177
1886	2,906,572	10,309,727	1,433,745
1887	3,674,664	9,677,991	1,962,378
1888	4,462,016	8,866,423	2,393,415
1889	5,170,059	10,051,620	2,641,271
1890	6,094,846	13,160,826	3,156,298
1891	5,752,634	13,578,228	3,057,785
1892	6,459,270	12,572,999	3,070,467
1893	6,403,154	10,189,535	4,203,005
1894	6,148,725	13,109,907	4,225,448
1895	5,528,629	12,614,160	4,931,322
1896	5,693,888	13,099,507	5,532,819
1897	6,021,452	15,382,958	5,986,232
1898	5,966,891	17,353,951	6,212,178
1899	6,242,976	16,556,247	6,389,769
1900	6,615,726	16,872,640	6,492,563

The relative importance of these five leading stock markets may be seen from the table of comparative receipts from the opening of the current year to September 30:

Comparative live-stock receipts at five western markets, nine months of 1901.

Markets at—	September.			Nine months ending September.		
	Cattle.	Hogs.	Sheep.	Cattle.	Hogs.	Sheep.
	Number.	*Number.*	*Number.*	*Number.*	*Number.*	*Number.*
Chicago	298,009	517,895	448,881	2,252,445	5,763,676	2,869,954
Kansas City	231,578	170,557	91,217	1,446,797	2,746,390	730,752
Omaha	89,608	117,336	159,778	557,538	1,753,260	884,847
St. Louis	110,836	157,377	50,328	683,094	1,655,729	423,036
St. Joseph	47,841	122,647	65,058	296,482	1,494,614	422,566
Total, 1901	777,872	1,085,812	815,262	5,236,356	13,413,669	5,331,155
Total, 1900	713,942	1,169,897	633,419	4,796,139	12,593,989	4,849,843

The following compilation shows the number of cattle slaughtered yearly at the four Western centers:

Number of cattle slaughtered at certain markets, 1887–1900.

[From the Cincinnati Price Current].

Year.	Chicago.	Kansas City.	St. Louis.	Omaha.	Total.
1887	1,591,000	186,000	187,000	84,000	2,048,000
1888	1,643,000	374,000	211,000	134,000	2,362,000
1889	1,763,000	476,000	210,000	239,000	2,688,000
1890	2,224,000	549,000	277,000	322,000	3,373,000
1891	2,184,000	532,000	315,000	325,000	3,356,000
1892	2,450,000	669,000	336,000	456,000	3,911,000
1893	2,233,000	899,000	429,000	543,000	4,104,000
1894	2,024,000	925,000	492,000	518,000	3,959,000
1895	1,803,000	894,000	579,000	314,000	3,590,000
1896	1,782,000	896,000	606,000	345,000	3,627,000
1897	1,711,000	942,000	596,000	463,000	3,711,000
1898	1,615,000	907,000	541,000	490,000	3,553,000
1899	1,702,000	993,000	542,000	549,000	3,786,000
1900	1,794,000	1,116,000	590,000	553,000	4,053,000

SOUTH AMERICAN COMPETITION.

On the question of the possibility of South American competition with the United States, the figures of cattle slaughter on the River Plate (Argentina and Uruguay) and on the Rio Grande are given for corresponding period in the following table:

Statistics of the Saladero slaughters of cattle on the River Plate (Argentina and Uruguay) and Rio Grande for the last twenty years.

1884	1,511,200	1893	2,011,400
1885	1,643,000	1894	1,995,800
1886	1,581,000	1895	1,954,600
1887	1,242,000	1896	1,419,700
1888	1,633,150	1897	1,520,600
1889	1,779,700	1898	1,351,700
1890	1,824,550	1899	1,412,500
1891	1,985,100	1900	1,309,100
1892	1,964,000		

The slaughter of cattle at the five leading centers in the United States in 1900 aggregated 6,615,726 head, so that the South American centers receive but 20 per cent of the number required for the slaughtering industry at Chicago, St. Louis, Kansas City, Omaha, and St. Joseph.

ANIMAL INDUSTRY IN NEW ENGLAND AND THE SOUTHWEST.

Within fifty years a radical change has taken place in the part which live stock plays in New England. We may take Connecticut as representative. Census Bulletin No. 104, Table 16, shows that all other classes have been subordinated to dairy cows and horses, the one form-

ing the central feature in agriculture and the other representing the growth of cities.

Number of live stock in Connecticut, 1850–1900.

Census year.	Dairy cows.	Other neat cattle.	Horses.	Mules and asses.	Sheep.[1]	Swine.
1850	85,461	127,214	26,879	49	174,181	76,472
1860	98,877	143,080	33,276	82	117,107	75,120
1870	98,899	119,124	34,985	190	83,884	51,983
1880	116,319	120,567	44,940	539	59,431	63,699
1890	127,892	75,769	43,764	279	37,652	62,067
1900	126,434	90,624	52,576	302	23,021	46,447

[1] Lambs not included.

The dairying and the grazing industries, as the two main branches of the animal industry, are contrasted in Census Bulletin No. 104, Table 18, showing the percentages of various animal products in 1899 in Connecticut and Arizona:

Animal products in 1899 in Connecticut and Arizona.

Products.	Connecticut.		Arizona.	
	Value.	Per cent of total.	Value.	Per cent of total.
Animals sold and slaughtered	2,014,358	17.3	3,204,758	70.9
Dairy produce	7,090,188	60.9	540,700	12
Poultry and eggs	2,507,526	21.5	278,370	6.1
Wool and mohair	22,711	.2	431,484	9.5
Honey and wax	16,576	.1	67,489	1.5
Total	$11,651,359	100	$4,522,801	100

SOURCES OF LIVE-STOCK SUPPLY.

The commercial supply of the different kinds of live stock, according to the Treasury Bureau of Statistics, is derived in the United States from different areas of production. Taking cattle as representative of the whole movement, there are three territorial sources on which the markets of the interior depend for their annual receipts:

1. Texas, Arkansas, Oklahoma, and Indian Territory, representing the more southern grazing areas in which the grazing economy still predominates in the preparation of stock for markets.

2. The Western ranches, especially Montana, Wyoming, the Dakotas, and Colorado, the most northern productive territory, just as the Texas territory represents the remotest southern source of considerable supply. Each of these two widely distant sources has its own peculiar advantages either in climate or in special nutritive value of pasturage.

3. The feeding States, which lie within the corn belt, including Missouri, Kansas, Nebraska, Iowa, Illinois, Tennessee, and to some extent

Michigan and Wisconsin. These eight States derive a large portion of their cattle for feeding purposes from the Western or Texas ranches in an unfinished state, keeping them over the winter usually for preparation for the spring market. Within this group of States the influence of live stock has made itself felt upon the agricultural economy, not only by affording the farmer a convenient use for his surplus corn, but also by requiring him to devote more attention to the raising of various kinds of fodder crops in order to provide for the feeding of the herd during the fattening period of the year.

The following table gives the receipts of Texas cattle at Chicago, by months, for the years named:

Texas cattle receipts at Chicago, 1896–1900.

Month.	1896.	1897.	1898.	1899.	1900.
January	29,000	18,500	7,600	21,658	19,150
February	18,000	16,700	12,484	19,500	14,200
March	21,210	13,150	11,079	18,618	18,410
April	16,655	13,327	2,835	8,512	7,119
May	28,557	19,146	7,133	5,291	6,150
June	43,222	17,975	13,869	8,383	11,308
July	45,876	24,548	17,683	13,800	20,850
August	34,300	32,527	11,522	16,582	32,127
September	33,211	18,008	9,675	20,969	23,324
October	20,812	14,868	19,030	18,200	25,410
November	17,250	6,400	5,978	10,750	9,178
December	15,400	7,950	11,520	9,117	7,500
Total	328,563	202,697	130,408	171,389	194,726

While the Texas supply of unfinished cattle will always figure in the stocking of the Northern ranges and the feeding lots of the corn belt, the tendency is to finish more of the cattle for market as corn and hay increase and the grazing sections decrease in the development of the State. Going back over a period of fifteen years, receipts of Texas cattle show a steady gain from 1885 to 1892, when the highest figure was reached with the remarkable supply of 717,153 head. Since then receipts have decreased somewhat, reaching a minimum in 1898, when only 130,408 were received. Now the supply is rising again, and though Texas cattle raisers hardly expect to get back to the conditions of 1892, so far as supplies are concerned, the steady, earnest effort that is being made to build up the depleted herds will show itself sooner or later. However energetic Texas cattle producers may be, the time is likely never to come when Texas will have as many marketable cattle as were in its limits in 1892. The reason for this lies in the fact that hundreds of feeders in the corn belt find the young cattle of Texas a very profitable investment. When Texas cattle were abundant and cheap, the ranchman of the far North bought freely, and, in fact, depended largely on Texas stock to replenish his ranch after his season's marketing. Now comparatively few Texas cattle are sent

directly to the ranges of Montana, Dakota, and Wyoming. The great majority are fattened at home on cotton-seed meal, or sent to the corn belt feed lot to receive a finish on that cereal.

THE RANGE-CATTLE INDUSTRY.

The present condition of the cattle business on the ranges is far from satisfactory, either to the range people themselves or to the farmer who prepares cattle for market by feeding them on his own land. The United States Government now owns between 250,000,000 and 300,000,000 acres of land over which sheep, cattle, and horses are allowed to graze free of charge. The maintenance of this portion of the industry is conditioned upon the gift of free grass. It is now, however, in that stage of change in which hay is necessary to supplement the fresh grass as a means of maintaining the herds in many parts of the grazing lands.

The history of the range-cattle industry throws some light on the existing situation. As early as 1874 or 1875 the improvement of the grade of range cattle was begun by the cattlemen of Wyoming. Importations were made from Europe for the best obtainable breeds. The bulk of the range cattle was imported from Texas between 1868 and 1878. After that the range men drew largely from the Rocky Mountain States. By 1894 the large frame of the Texas cattle had become crossed with the small-boned variety, forming the best type of beef cattle in the ranches of the West.

The most important economic factor in building up the range-cattle industry was substantially free pasturage on public lands. Natural increase, public pasturage free of cost, improvement of breeds, and the consolidation of many herds under the ownership of great ranch companies, were all features of the growth of the Western cattle industry between 1873 and 1884. Between these dates the Wyoming State Growers' Association increased its holdings from 20,000 of cattle, worth $350,000, to 2,000,000 head, worth $100,000,000. The range-cattle business reached the highest point about 1885. It had been unusually profitable up to that time. The average cost of raising a steer was usually estimated by range stock growers at 75 cents to $1.25 a year. In four years the steer was ready for market at a cost of $4 or $5. At the railroad station loaded for shipment they were worth $25 to $50 per head.

As might have been expected, such extraordinary returns on capital attracted investing enterprise. Between 1879 and 1886 vacant ranges were fitted up with astonishing rapidity. Herds were bought out and consolidated in order to control as much as possible the ranges claimed by each herd. The struggle of rival cattlemen for range pas-

turage arose from the competition for the enjoyment of the use of the public domain as long as the pasturage was worth having.

The crisis in the range-cattle business came about 1886–87, or a little earlier. By that time the ranges had become fully stocked or possibly overstocked, so rapidly had been the rate of multiplication in the herd. There had been two dry summers preceding this, with the effect that one-half of the cattle in north Wyoming and Montana perished. Many herds lost 60, 70, and even 90 per cent, and in some instances herds of several thousands were utterly wiped out. This proved the death blow to the large consolidated range companies which had hitherto enjoyed the use of the public domain. By July, 1893, they had practically all passed out of existence in the far Northern and Rocky Mountain States. Subsequently the industry took the form of a smaller scale, with fenced or fairly defined pastures and herding. The herd law put an end to the range business in Kansas and Nebraska. Under this law a cattle owner was obliged to keep his cattle off unfenced fields of grain or stand a suit for damages.

The change which drought, severe winters, overstocking, the withdrawal of reservations into the public domain, the sale of public lands, and the herd laws brought about revolutionized the stock industry within the few years from 1885 to 1893. This revolutionary change took the form of a division of the business on territorial lines between the southern and the northern sections beyond the Mississippi. Cattle growing on inclosed pastures in Texas succeeded the free-range system. The new pastures covered the hitherto vacant Staked Plains. The feature of the business on this plan consisted in raising steers to the two-year limit and then shipping them north to Wyoming and Montana for finishing on the rich pastures of those mountain States, or of sending them to Kansas or Nebraska, where they were fattened by feeding for the market. On account of the less nutritive value of the Southern grasses it has not always been possible to mature beef animals there. Large shipments were made to slaughtering centers for canning purposes. Drought in the Southern States drove the tide of unfinished cattle toward the corn States early in the nineties, and thereby substituted a live-stock basis for a cereal basis in Southwestern agriculture. The new agriculture of the West is now really based on live stock as the vital factor in farm economy. By its use the corn crop, the grasses, and the hay crop are all enhanced in value by being converted into the form of meat and dairy products, thereby securing also the refertilization of the soil.

The policy of the Government under these circumstances should not be one of standing in the way of farm development, but rather of removing obstacles to the expansion of its historic homestead policy.

DISTRIBUTION OF STOCKERS AND FEEDERS.

The demand for stockers and feeders is the largest factor in the shipments from the Kansas City market. The total shipments for this purpose in 1900 amounted to 669,743 head of cattle and calves. A considerable proportion of the receipts which arrive at the stock yards, especially in the fall of the year, are sold to escape the necessity of keeping them over winter in districts where pasturage becomes inadequate and where fodder supplies are too expensive or too deficient for profitable holding of the stock by producers. This condition results in putting on the market live stock which does not meet the requirements for killing purposes. This stock passes into the hands of farmers and owners of feed lots throughout the feeding belt. The scale on which this distribution takes place is determined to a great extent by the condition of the corn crop and the surplus cattle which stock feeders can command for the winter feeding.

Stockers play a different rôle in agricultural economy, the demands of which they are called upon to meet. As already pointed out, live stock has rapidly been passing into a more fundamental function in the farming system of the Central and Western States as a basis of the new agriculture. The demand for cattle, especially of a younger grade, for stocking purposes has grown wonderfully since the middle of the decade just ended. The progress of dairying in these States is partly responsible for the demand for stockers, but breeding has also become an important factor.

Kansas City being the chief distributing center for supplying the surrounding feeding States, the table of a seven years' movement is given.

Monthly shipments of stockers and feeders from Kansas City.

Month.	1894.	1895.	1896.	1897.	1898.	1899.	1900.
	Cars.	*Cars.*	*Cars.*	*Cars.*	*Cars.*	*Cars.*	*Cars.*
January	846	795	820	1,635	1,191	895	1,240
February	897	481	935	1,427	1,201	954	1,169
March	962	1,001	719	1,192	1,345	1,109	1,421
April	391	527	546	838	573	751	1,084
May	242	321	483	821	585	665	977
June	169	383	354	629	475	416	610
July	243	819	568	841	511	537	659
August	880	1,945	1,416	2,767	1,769	2,515	2,489
September	998	1,630	2,850	2,996	3,503	3,828	3,033
October	1,792	1,903	2,629	2,666	3,641	3,480	3,721
November	1,644	1,518	2,332	2,806	2,458	2,671	2,687
December	1,058	1,214	2,517	1,640	1,365	1,572	1,501
Year	10,072	12,587	16,169	20,255	18,617	19,393	20,591

Average monthly prices of Texas and Western cattle at Chicago, 1894–1900.

[From the Drovers' Journal.]

Months.	Monthly average prices for straight Texas cattle at Chicago for seven years.							Monthly average prices for straight Texas, native corn-fed Texas, and native corn-fed Westerns, 1900.			
	1894.	1895.	1896.	1897.	1898.	1899.	1900.	Straight Texas steers.	Texas bulls, cows, and heifers.	Native corn-fed Texas steers.	Native corn-fed Westerns.
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
January	3.85	3.80	3.70	3.80	4.20	4.45	4.50	4.50	3.50	4.60	5.50
February	3.45	3.90	3.50	3.80	4.15	4.20	4.30	4.30	3.40	4.45	5.10
March	3.30	4.25	3.65	4.00	4.25	4.50	4.30	4.30	3.60	4.45	5.10
April	3.45	4.30	3.45	4.00	4.20	4.50	4.65	4.65	3.50	4.70	5.10
May	3.60	4.15	3.40	4.00	4.15	4.70	4.65	4.65	3.50	4.80	5.25
June	3.50	3.50	3.25	3.75	4.20	4.70	4.40	4.40	3.40	4.90	5.30
July	3.20	3.90	3.00	3.40	4.45	4.60	4.25	4.25	3.15	4.95	5.30
August	2.85	3.45	2.75	3.60	4.00	4.20	3.95	3.95	3.05	5.20	5.55
September	2.80	3.20	2.75	3.50	3.60	4.00	3.85	3.85	3.20	5.10	5.50
October	2.75	3.05	2.95	3.55	3.65	3.75	3.65	3.65	2.95	4.80	5.40
November	2.65	3.05	3.75	3.70	3.75	3.85	3.95	3.95	3.05	4.60	5.30
December	2.75	3.10	3.70	3.85	3.80	4.30	3.90	3.90	3.20	4.60	5.15
Average	3.20	3.65	3.35	3.75	4.05	4.35	4.20	.....	.....	.....	.....
Average 1900	.....	.....	.....	.....	.....	.....	.....	4.20	3.30	4.75	5.30
Average 1899	.....	.....	.....	.....	.....	.....	.....	4.35	3.25	4.90	5.35

LOCATION OF SLAUGHTERING ESTABLISHMENTS.

Another feature of the Western live-stock industry is the southwestward trend of the cattle-slaughtering establishments. Two of the largest packing houses in the West have very recently bought lands at Fort Worth, Tex., in order to be near the source of pastured cattle. The quantity of Texas cattle shipped to Chicago reached its maximum in 1892, when 717,153 head were received. Since then receipts have receded somewhat till 1898, when only 130,408 head arrived. In 1900 the direct arrivals were 194,726 head. Locally, agriculture has much to gain by locating the packing houses in the midst of the source of supplies. Among other things, the cotton-seed crop will be more in demand on the farm for feeding purposes. Another advantage lies in the nearness of the Texas cattle market to the Gulf seaports in supplying the export trade. Texas at the present time contains as many neat cattle as any two other States. Under these conditions the foreign market can be more economically reached. The effect of this change in the location of this branch of animal industry will be to give a much more direct access on the part of the Western packing-house products to the Central and South American markets. It furthermore has a bearing upon the development of stock raising in the East.

In the State of Maine it has already become an open question as to whether stock raising for the beef market would not be equally profitable with dairying. There are evidences that throughout the middle

States the fattening of cattle for meat purposes is being resumed under the influence of the high price of meat. There are other indications that the entire East is beginning to put its agriculture once more upon the live-stock basis, and that the intense competition with Western meat has probably reached its highest point, if not already begun to decline. Distance, when once the cost of producing cattle becomes more nearly equal, will ultimately decide in favor of a profitable development of stock raising in many Eastern sections of the country which have passed out of cultivation and await their utilization for pastures.

TRUCK FARMING.

Truck farming may be said to differ from market gardening in being carried on not for local sale, but for the purpose of supplying distant markets by means of the improved methods of transportation now in use. Market gardening is dependent on the progress of the season in the locality. By means of rapid shipping facilities the perishable vegetable products of distant localities are delivered in markets far in advance of the local supply. Hence the season of consumption, which was formerly measured by the period of the local supply, has in many cases been extended to cover the full circuit of the year. Trucking, as thus organized, has extended its development in two directions: (1) Along rivers and waterways, such as the bays and inlets of the Rhode Island coast, the Long Island Sound, the Chesapeake Bay, Mobile Bay, and the shores of Lake Michigan adjacent to Chicago. Water transportation in connection with a large center of consumption has been the basis of the earlier developments. (2) Southward on both coasts and along the shores of the Gulf into Texas. An unfavorable feature of the trucking industry is the heavy loss in quality in the course of marketing. The producer complains rightly that he is the heaviest sufferer from this source. The railroads have been obliged to protect themselves by collecting freight in advance in some cases, owing to the perishable character of the cargo. Largely out of these conditions has come the system of selling by commission.

The successful marketing of truck products is possibly the chief problem of this division of rural industry.

Professor Earle, who has studied the question thoroughly, reached the conclusion that it requires business ability of a high order to market truck crops successfully. It is, he says, by far the most important part of the business, for it is useless to grow good crops unless they can be sold at a profit; yet it is safe to say that there are ten men who grow good truck crops where there is one who markets them to the best possible advantage. In the early days of the business nearly all such crops were shipped on commission, and at the present time many

of the more perishable crops are still mostly sold in this way. It has the advantage of giving the producer the full benefit of the market, but by the other method he must assume all the risks of loss in transit and of temporary gluts, besides the very considerable risk of loss through dishonest agents, since by this system the commission merchant has things practically in his own hands.

CALIFORNIA FRUIT SHIPPERS.

The California fruit shippers, realizing the drawbacks to selling on commission, some years ago inaugurated a system of auction sales in many of the large cities. This has been so successful that the great bulk of the fresh-fruit shipments from that State are now sold in this way. Cargoes of foreign fruits are also often disposed of at auction, but for some reason this system has been little taken up by Eastern produce shippers, though it has been much discussed and seems to have some advantages. The shippers of Eastern produce are so widely scattered that it has been impossible to unite them in giving a fair trial to this or any other system requiring concerted action.

A still further development in shipping has been attempted at some points. The growers have pooled their interests and now load solid cars, which their shipping agent is empowered either to sell on track or to consign as a whole to any market that, from the latest advices, seems to be most desirable.

FRUIT GROWING.

APPLES.

Apples are the principal American fruit crop. The commercial apple crop of 1901, according to the final report of the American Agriculturist, October 19, is placed at 23,000,000 barrels, against 48,000,000 one year ago, and nearly 70,000,000 barrels in the banner crop year of 1896. The commercial apple belt includes New England, the Middle States, especially New York, and Michigan. The surprising thing is the development of the crop in the Southwest; many counties there now report the largest yield in years, and of fine quality. As a result Eastern consumers must depend more largely upon Southwestern apple orchards. This year's crop is phenomenally small in the States usually expected to furnish the surplus for winter markets on both home and export account.

The extent to which orcharding has supplemented grain and stock growing in certain of the central States of the West may be indicated by the size of the orchards, and the amount and value of the crop in certain localities. A single grower in Missouri was offered $50,000 for his crop in the fall of 1901. A single buyer has arranged for the

harvesting of crops of 640 acres at one place in Kansas, 500 acres at another, and 460 acres at another. This yield, it is estimated, will amount to 30,000 barrels. The trees from which this crop is gathered vary from 14 to 17 years of age, showing that orcharding has had a good start in this portion of the country, and that it has already become a marked feature of the variation in the agriculture of the middle West. It is further to be noticed that the largest apple buyers of the East frequent the States of Missouri, Kansas, Nebraska, Colorado, Oregon, California, and West Virginia for the purpose of contracting for the purchase of the year's apple crop from growers in these States. A single buyer has thus arranged for 253,000 barrels, amounting in all to a million of dollars in value. He has cold storage facilities for 300,000 barrels

FRUIT GROWING BY LOCALITIES.

The growth of orchards in still other parts of the country has occurred within recent years. A small station, Cobden, in southern Illinois, during the last season shipped as many as 300 cars of peaches; and Union County alone, in which this point is located, shipped fully 400 cars, mainly to the Chicago and other city markets. One feature of orchard development has consisted in taking advantage of the earlier seasons. Peach growing has extended southward. From central Georgia northward by way of Chattanooga, and in different portions of the Ohio Valley, increasing attention is being given to this source of agricultural wealth. Thence the peach area finds its next largest development on the shores of Lake Michigan, in some counties of which there were in 1897 more than 8,000 acres devoted to peach orchards.[1] In Piedmont, Va., apples have been grown for export for many years. The mountain districts of the Southern States are increasing in importance as fruit growers. New York and New England still hold the first rank in this source of wealth.

The fruit industry has shifted much from time to time. Formerly the Eastern cities depended almost entirely on the Delaware peach crop. This has now lost its prominence in favor of other localities. The cause of this loss has usually been attributed to such plant diseases as the "yellows," for instance: but fuller study of the subject shows that the causes were principally defects in cultural and commercial methods. Mr. G. H. Powell gives the following reasons for the decline in the once famous Delaware peach orchards:

1. Uncertainty of the crop in recent years.

2. Increasing competition, due to the development of immense peach tracts throughout the country.

[1] Reports Industrial Commission, Vol. VI, p. 442.

3. Lack of intensive culture, that is now made necessary by competition, such as tillage, pruning, thinning, and other orchard incidentals.

4. The prevalent tenant system of land management. In some sections nearly all of the orchards are tenanted.

5. A fundamentally wrong package—the large five-eighths bushel basket instead of smaller baskets and carriers. This year several of the best growers will begin a cooperative study of various systems of pruning, thinning, more intensive tillage, and better marketing.

THE SUGAR INDUSTRIES.

The history of sugar production in the United States is one of varied and ceaseless experiment. Beginnings were made with maple sugar in 1791. Maple sugar was then manufactured in Otsego County, New York, to the amount of 120,000 pounds, equal in flavor to the best muscovado. The recorder of this fact states that the industry was then carried on in different parts of the United States, and that from the excellence of the product it must, when more extensively known, soon diminish, if not entirely preclude the necessity for importing sugar of any other quality.[1] The maple sugar industry now ranks next in importance to dairying in Vermont, where the annual output is worth between $1,000,000 and $1,500,000. Maple sugar is also produced extensively in New Hampshire, Northern New York, and Ohio.

Cane sugar has been a permanent factor in domestic production, in Louisiana especially, ever since the acquisition of that territory by the United States.

The census of 1860 reported that the progress of sorghum culture had furnished the West with this new article of domestic luxury and utility, and rendered this section comparatively independent of sugar cane. This was in the time of the civil war, when the North and West were cut off from the Louisiana cane sugar supply, and sorghum as a substitute for sugar and molasses had a development which it never afterwards obtained. In fact, the South was more dependent than the North on sorghum products.

The share of each source of the domestic sugar supply is given in the following table from the Statistical Abstract of the Treasury Bureau of Statistics for the years 1884–1900:

[1] Hardie's "American Remembrancer," p. 78, 1795.

Quantity, in tons, of sugar consumed in the United States, 1884 to 1900.

[Data furnished by Messrs. Willett & Gray, New York.]

Calendar year.	Refined product of imported sugar.	Domestic product.					Total.	Consumption per capita.
		Manufactured from imported molasses.	Of cane.	Of maple.	Of beet.	Of sorghum and other.		
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Pounds.*
1884	1,098,090	50,000	135,243	25,000	737	313	1,309,383	53.4
1885	1,122,345	47,259	100,876	25,900	600	1,400	1,298,380	51.8
1886	1,282,755	72,613	135,158	18,000	754	.....	1,459,280	56.9
1887	1,213,791	62,274	85,394	20,000	255	.....	1,381,714	52.7
1888	1,270,629	58,840	167,814	20,000	1,640	360	1,519,283	56.7
1889	1,193,761	43,715	153,909	22,000	2,400	689	1,416,474	51.8
1890	1,257,292	53,282	136,503	25,000	2,800	1,500	1,476,377	52.8
1891	1,614,580	31,320	221,951	15,030	5,400	570	1,888,851	66.3
1892	1,597,306	30,000	204,064	9,500	12,000	500	1,853,370	63.8
1893	1,623,872	20,000	235,886	10,500	16,000	500	1,906,758	64.4
1894	1,700,635	15,000	271,336	5,000	20,443	300	2,012,714	66.7
1895	1,572,438	15,000	324,506	7,500	30,000	300	1,949,744	63.4
1896	1,670,963	603	243,220	5,000	40,000	300	1,960,086	62.5
1897	1,715,607	150	310,537	5,000	39,684	.....	2,070,978	64.8
1898	1,708,937	1,700	252,812	5,000	84,453	.....	2,002,902	61.5
1899	1,844,642	5,200	160,400	5,000	62,826	.....	2,073,068	62.6
1900	1,950,014	7,647	174,450	5,000	82,786	.....	2,219,847	65.2

Leading refiners state that little or no sugar is manufactured from domestic molasses; also that in refining only about 2 per cent of the original weight is wasted. Messrs. Willett & Gray, New York, state that of the sugar consumed in 1898 only about 141,811 tons were unrefined.

THE BEET-SUGAR INDUSTRY.

The development of the beet-sugar industry in the United States has arisen largely from the successful experiments in Germany, where the industry has reached its highest achievement during something like a century of progress. Experiments with our lands show that certain localities yield a richer sugar content in the beets than others. The beginning of the sugar-beet industry in this country dates from 1835. The first analysis by the Department of Agriculture was made in 1862. Early attempts at production were disastrous solely on the agricultural side. Cultivation was not understood. In 1884, at Alvarado, near San Francisco, a small factory was consuming 80 tons of beets per day. Beet growing had proved successful and become highly profitable to the farmers. Further efforts at raising the beet resulted in the establishment of several mills in the Central West. The methods of cultivation greatly improved, and several States, in order to promote the new agricultural industry, offered bounties to encourage the manufacture of beet sugar.

In 1890 the Michigan Agricultural College distributed beet seed imported from Europe among 400 farmers, 228 of whom, representing 29 counties, reported results and sent beets for analysis. The average

content of the sugar in the juice was 14.2 per cent, and the coefficient of purity was about 80 per cent in 200 of these samples. The estimated yield of beets per acre was 13 tons. In this way the adaptability of the soil and climate of such parts of Michigan for the beet industry was successfully demonstrated. The largest factories are now in operation in California. In New York, in the vicinity of Binghamton, a yield of from 10 to 12 tons per acre has been obtained by the farmers. The cost of production varies from $20 to $45 per acre. A State bounty of one cent a pound on sugar produced from beets, for which the farmer receives $5 a ton, has been in force. Generally the sugar-beet crop is regarded as highly profitable.

In Michigan, Germans and Hollanders have grown beets profitably on land for which a rent of from $8 to $12 an acre was paid. The number of acres rented depends upon the working force of the family. Nine factories were erected in Michigan under the stimulus of a State bounty. The addition of another cash crop caused the price of farm lands in the neighborhood of factories to rise $10 per acre. It is necessary, as a matter of policy, to be liberal with farmers in order to establish the industry and guarantee a supply of beets. Hence the bounty policy. The cost of production in Michigan, exclusive of fertilizer and rent of land, is reported as being $35.43 per acre. Other evidence places the cost at $30 per acre, mostly for labor. Mr. Rogers considers the beet crop as one of the surest from the standpoint of the natural risks.

The sugar-beet industry has grown rapidly within the last four or five years. California's yield for this campaign (1901) is reported as amounting to 200,000 tons.

In Michigan, and elsewhere also, the sugar-beet industry was inaugurated under a bounty law which soon became the subject of litigation, so that the new industry had, almost from the start, to stand alone. Nothing contributed more to the survival of the sugar-beet business, under these circumstances, than the desire of the farmers for a new cash crop. The degree of eagerness with which such a new market for farm products is sought is illustrated by the fact that at Binghamton, N. Y., beets have been hauled distances of 75 to 100 miles to the factory.

The risks of beet culture are not high, although the labor is exacting, the cultivation intensive, and the crop exhausting. The soil has to be especially selected and storage is expensive and hazardous. The German average yield is 13 tons per acre. The average American yield in 1899 was 8 tons of 2,000 pounds each to the acre.

A further factor in the development of the sugar beet is the gradation of price to saccharine standard, so that the better the quality of the crop the higher the price. In order that this standard of grada-

tion may be equitably applied for both farmer and factory, each party to the contract employs an expert, as is the case, for example, in California.

The experts in charge of the factory at Rockyford, Colo., have become thoroughly convinced that this valley (Arkansas Valley, Colorado) is the ideal sugar-producing locality on account of its equable climate, ample supply of water for irrigation, cheap fuel and limestone, and an unlimited extent of available land for beet culture.

The beets are grown by the farmers under contract with the factory, and paid for according to the saccharine content, determined by chemical tests made of samples taken from the wagons at the time of delivery. But the factory does not depend entirely on its contractual relations with farmers for its beet supply. Besides the 8,000 acres contracted for yearly for five years in this way, the factory controls about 5,000 acres of land. Most of the land will be farmed by tenants, but only a portion of each farm is devoted to beets each year. Selling upon this basis encourages better farming and the raising of better beets. It is regarded as the only fair way, both to the raiser and to the manufacturer.

As an example of the quality of the sugar beets produced upon this land, according to a census bulletin, it may be mentioned that 6 carloads of beets from one field were tested, with results as follows: One carload, 16.3 per cent; 3 carloads, 18.8 per cent, and 2 carloads, 20.4 per cent.

Sugar-beet production, it thus appears, owes much of its development to the selection of seed and of soil, with a view of obtaining the type of beet with a maximum sugar content—that is, 15 per cent or more of sugar.

Suitability of soil is so much of a determining factor that beets raised near Fredericksburg, Va., which would yield 4 per cent, or 80 pounds, less sugar per ton than those raised in Colorado or other Northern localities, it is believed, could not compete successfully in the sugar market with the more favored localities, other things being equal.

The influence of sugar-beet culture upon the system of farming is evidenced in various ways. For example, the sugar-beet crop in rotation ahead of wheat is one of the causes of the improvement of France as a wheat-growing country. The leaves, pulp, and molasses are all available for feeding to stock, and this increases the capacity of the farm to maintain live stock, whereby the fertility of the soil may be renewed more effectively and at less cost than by artificial fertilizers.

The relative cost of producing beet and cane sugar will have much to do with the future of the domestic beet-sugar industry. There are no very exact figures available, but it is stated on good authority that

the cost of producing sugar in Louisiana is higher than in Porto Rico, although costs are sure to rise in the latter place and to be reduced here. Porto Rico can produce sugar at 2 cents a pound (the duty of $1.68 per hundred pounds having been discontinued); here it costs from 3 cents to 3¼ cents a pound. Dr. Wiley estimates the cost of the product in Germany at from 2½ to 2¾ cents per pound, exclusive of taxes. In the United States the cost is perhaps 3 cents.

According to a recent bulletin of the Twelfth Census, there were 31 beet-sugar factories in the United States in the census year ended May 31, 1900, representing an invested capital of $20,958,519, and producing 71,427 long tons of beet sugar, valued at $7,323,857. Since that date the existence of 37 factories has been reported, having a nominal daily capacity of 22,310 short tons of beets and capable of manufacturing 240,000 short tons of sugar annually.

The acreage of beets actually contracted for in 1899 was 135,305 acres; but, because of the shortage of the crop in various parts of the country, particularly in California, beets were harvested from 105,175 acres only, and the average yield amounted only to 8 short tons to the acre.

The acreage in beets in the United States in the census year, together with the quantities and cost of beets used, and the quantities and value of sugar produced, were as follows:

Quantities and values of sugar beets and beet sugar, crop of 1900.

States.	Acres in beets.	Tons of beets (2,000 pounds).	Cost.	Average price per ton.	Kinds and value of sugar.			
					Granulated.		Raw.	
					Pounds.	Value.	Pounds.	Value.
California	63,878	354,942	$1,585,953	$4.47	43,839,911	$2,049,726	42,901,802	$1,440,592
Michigan	37,084	205,925	902,592	4.38	32,737,098	1,561,100	971,185	39,184
All other	34,393	233,791	996,775	4.26	39,109,347	1,969,701	3,898,732	162,278
United States.	135,305	794,658	3,485,320	4.39	115,686,356	5,580,527	47,771,719	1,642,054

The total quantity of raw and granulated beet sugar produced in the United States was 163,458,075 pounds, valued at $7,222,581, of which California produced 86,741,713 pounds, valued at $3,490,318; Michigan, 33,708,283 pounds, worth $1,600,284, and all other States and Territories, 43,008,079 pounds, with a value of $2,131,979.

Deducting the raw sugar reported to be melted in the crop of 1900 (3,462,700 pounds) from the total amount of raw sugar manufactured (47,771,719 pounds), there remain 44,309,019 pounds, which may properly be credited as this year's output of raw sugar, and the total output of granulated and raw would be 159,995,375 pounds.

Number and capacity of beet-sugar factories, by States.

States and Territories.	1899.		1900.	
	Number of establishments.	Nominal daily capacity (in tons) of beets.	Number of establishments.	Nominal daily capacity (in tons) of beets.
California	[1]8	9,900	8	9,900
Colorado	1	350	3	1,850
Illinois	1	700	1	700
Michigan	9	4,100	10	4,450
Minnesota	1	400	1	400
Nebraska	3	1,260	3	1,260
New Mexico	1	200	1	200
New York	2	400	3	1,000
Ohio			1	400
Oregon	1	350	1	350
Utah	3	1,100	4	1,450
Washington	1	350	1	350
United States	[1]31	19,110	37	22,310

[1] Includes 1 idle establishment.

Evidence gathered from various countries outside of the United States shows that sugar-beet culture over practically all the world is enlarging. This year's beet area in Germany is reported by Willett & Gray as being 30,000 hectares (74,130 acres) larger than last year. The same tendency is active in Russia, Italy, and Austria.

The London Statist is authority for the following table, showing the world's production of beet and cane sugar at decennial periods from 1840 to 1900, and the percentage which beet sugar supplied of the world's product at each period named:

World's production of cane and beet sugar, 1840–1900.

Year.	Cane sugar.	Beet sugar.	Total sugar.	Supplied by beet.
	Tons.	*Tons.*	*Tons.*	*Per cent.*
1840	1,100,000	50,000	1,150,000	4.35
1850	1,200,000	200,000	1,400,000	14.29
1860	1,510,000	389,000	1,899,000	20.43
1870	1,585,000	831,000	2,416,000	34.40
1880	1,852,000	1,402,000	3,254,000	43.08
1890	2,069,000	3,633,000	5,702,000	63.70
1900	2,850,000	5,950,000	8,800,000	67.71

III. AGRICULTURAL LABOR.

In the geographical distribution of the population much has yet to be done before the right relation of labor to land is reached. In the development of agriculture it is the compact group of small holdings rather than the holders of whole sections that really benefits the country most. While, therefore, the public lands are generally taken up, the occupation of large holdings by smaller settlers remains to be

done in a very large part of the country lying southwest of the Missouri River. Ninety per cent of the population of this country is east of the Missouri River, and one-half of the territory is west of it. Development of agricultural lands by increasing the density of settlement to a more profitable degree is the policy of such southwestern railroad lines as the Atchison. To some extent the annual distribution of farm labor to and from the Western wheat districts results directly or indirectly in the settlement of laborers upon lands. But the real work of adjusting the supply of farm labor to the demand is far more intricate and comprehensive.

SUPPLY AND DEMAND.

At present there is, outside of New England and the South, especially, an undersupply of agricultural labor. The diversification of farming has created a general demand for persons of experience and skill in farm operations. This demand is almost universal, but applies especially to the East and the central West. In the grain-growing sections the demand is seasonal, and becomes intensified at harvest time throughout the entire Mississippi Valley. The South is oversupplied with common labor.

Special phases of farm enterprise have developed new demands for varieties of skilled labor. This has been the case in dairying and in fruit growing. The directive talent in these pursuits is being supplied increasingly by the agricultural colleges. The methods and principles there taught are thus carried into practice and diffused among the operating laborers in these sections.

A surplus of agricultural laborers in the South is assigned by some witnesses as a cause both for the low degree of efficiency of colored labor and the backward state of progress in the use of improved machinery on farms. With the increase of the quantity of colored labor available its disposition has become more problematical. The price of such labor, 50 to 60 cents a day, makes the competition of the Southern white laborer impossible; hence the negro laborer has the field of farm labor to himself, and is easily persuaded to change his position or leave his employer for inducements offered elsewhere. Nevertheless, at least one extensive employer regards the Southern negro as the best agricultural laborer in America, and considers the negro as the foundation of the prosperity of the South.

In Virginia the negro is considered trustworthy, as a rule, and generally kind in the treatment of domestic animals. Colored farm labor in Virginia is generally satisfactory. In Tennessee, other than colored labor for the farm is inefficient and hard to get. Colored superintendents have been found to be successful. In Georgia, labor contracts for the farm are made on the same basis for white and colored men,

and employment for the entire year is not acceptable to farm labor. In California, hand labor on sugar beets, vegetable farming, and gardening is done largely by Asiatics. In Washington and Oregon, the same class of labor is frequently employed on similar work.

IRREGULARITY OF EMPLOYMENT.

Throughout the country in general, opportunities for regular employment at wages continue eight or nine months during the year. The other three or four months are given to irregular or occasional work, according to the locality or the habits of the laborer. In many localities laborers not regularly employed at wages earn their board and lodging during the winter months by feeding stock or similar light labor of a routine character.

Evidence has been practically uniform that while there is a good deal of hard work to be performed on the farm, the influence of machinery, the bettering of the condition of farm comforts, and the growing self-respect of occupancy or ownership have all contributed to make the general condition of the farmer better by far than it was twenty years ago.

AGRICULTURAL LABOR IN HAWAII.

New interest is added to the agricultural labor question by the accession of our insular possessions. There the question of admitting more Oriental labor is an open one. The preponderance of this kind is evident from the following statistics:

Number and nationality of sugar-plantation laborers in the Hawaiian Islands.

[Report of Hawaiian Bureau of Immigration, December 31, 1899.]

Islands.	Hawaiian.	Portuguese.	Japanese.	Chinese.	South Sea Islanders.	All others.	Total.
Hawaii	514	840	9,119	1,820	17	330	12,640
Maui	359	523	5,305	1,373	37	165	7,762
Molokai	30	21	698	2	.....	27	778
Lanai	7	6	348	43	4	1	409
Oahu	217	319	4,882	1,544	1	130	7,093
Kauai	199	444	5,292	1,197	20	153	7,305
Total, 1899	1,329	2,153	25,644	5,979	79	806	35,987
Total, 1898	1,482	2,064	16,786	7,200	68	979	28,579
Total, 1897	1,497	2,218	12,068	8,114	81	675	24,653

SEASONAL DISTRIBUTION AND MOBILITY OF LABOR.

Agricultural labor may be divided into three classes. (1) That furnished by the occupier's family. (2) Hired labor domiciled on the farm or adjacent to it. (3) That floating or migratory contingent which year by year seems to become a larger feature in the farm labor supply of Europe and the United States. This supply has become

international in its sources and scope of operations. It also moves northward with the progress of harvests from the lower to the higher latitudes in the wheat-growing countries. All of these movements are part of the conditions with which the farm labor market has to deal. As a rule the movement is not from cities to the country, inasmuch as city labor is looked upon with suspicion by the farmers, and is not regarded as particularly efficient. Nevertheless, in the stress of the harvesting season there is little choice, because delay involves the possibility of loss by damage from change of weather.

A good illustration of the seasonal pressure for farm labor is found annually on the Northwest coast, where the gathering of the hop crop and the wheat harvest creates a demand at the same time from all available sources. About the beginning of September (1901) the hop farmers were found advertising all along the coast and at interior towns for men to pick hops at the rate of $1 and $1.25 per box. At the same time the harvest in eastern Washington demands a small army of laborers, for which farmers are willing to pay from $2 to $3 per day and board. Simultaneously salmon canners along the rivers, especially when they have a large run of salmon, give rise to a seasonal demand for labor. Such public improvements as the railroad companies of the State have had under way call for fully 2,000 men at wages varying from $1.50 to $2.50 per day for good labor. Such conditions as these are more or less unusual, but they illustrate the difficulty of the farmer depending upon a supply of labor outside of that which is domiciled upon his own farm. Much loss necessarily arises from such uncertain supplies of labor in wheat-growing countries. The same difficulty has been met in many sections of the South during cotton-picking time, where a corresponding loss has been caused by an inadequate supply of labor.

MOBILITY OF LABOR.

Many colored laborers go from Virginia, and possibly from farther South, to New England and the Middle Atlantic States for the season. Wages of $18 to $20 per month are there paid, being double what they get in the South. Hop picking in northern New York, as in Kent, England, draws largely from the cities, of all classes and conditions. Cotton picking in the South has to make special demands on the labor of the towns; in some instances hauling the worker from and to town daily is part of the terms of employment. In trucking and fruit-growing sections in the South, along the Ohio, on the lake shores, and on the Pacific coast, the same resort to a seasonal supply of labor is necessary to save the crops. The practice is demoralizing, however, in its effect upon the community in many places, owing to the fact that these seasonal laborers are largely unattached members of society

who float from colder to warmer latitudes, and from city to country, and back with the changes in chances of obtaining food, clothing, and shelter.

An illustration of the difficulty of using a surplus of labor in one locality for meeting a special demand in farming has been given in a late proposal of a member of the New York board of aldermen to send 5,000 laborers, then out of work in that city, to harvest the wheat in Kansas and Nebraska. To this proposal the Western farmer responded with a positive refusal on the ground that these men would probably be economically inefficient, as a rule, if not socially dangerous to the rural community.

EFFICIENCY.

Evidence collected by Mr. J. R. Dodge, expert agent on farm labor, leads to the conclusion that the efficiency of farm labor has developed in different directions during the last half century. Skilled labor, owing to its contact with machinery and the influence of education, has attained increased efficiency, while unskilled and irregular labor has lost much of its former adaptability and value to the farm.

It is claimed generally that machinery has reduced the number of farm laborers, but improved its efficiency. In Vermont the supply is still mainly native labor, but foreign labor, consisting of Canadians and Scandinavians principally, and, to a less extent, of Poles, all of which are very satisfactory, is obtained through the immigration bureaus at Boston, New York, and other ports. These are mostly young men without family, but Scandinavian girls are frequently hired as household servants. Mr. Norris, of the New York State Grange, considers that machinery has not decreased the demand for labor on the farm, but opened new avenues of employment and so improved the condition of labor. In Illinois it is stated that about the same number of laborers is employed as 20 years ago, but that the hired help is now mainly of foreign birth, whereas it was formerly native-born. In New Jersey agricultural labor has suffered in quality from the competition of manufacturing establishments. In Salem County, a great trucking county, colored labor from the South has consequently been successfully introduced, but is less disposed to continuous labor and slower than the foreigners. In Pennsylvania the same unfavorable effect of industrial competition upon the quality of farm labor is noted.

FARM WAGES.

Farm wages in New Jersey are given at $25 to $30 per month, with house and garden furnished; with board, $12 to $18 per month; ordinary day labor, 75 cents to $1 per day; during harvest time, $2 to $2.50. In Minnesota and the Dakotas, at harvest time, the greatest difficulty

is experienced in obtaining sufficient labor to save the crop, at the rate of $2 to $3 per day. In Mississippi, plantation labor at $1.25 to $1.50 a day is reduced by the competition of the work on the levees and other public works. Elsewhere the building of railroads and engineering works depletes the country of much of its best labor. The hours of labor vary from ten to twelve a day, and the labor contract on farms usually does not run beyond seven or ten months of the year, except in certain portions of the South where truck farming affords work all the year round. On a Connecticut farm the working farm year is between one hundred and fifty and one hundred and seventy-five days, and on some other Northern farms it ranges probably between two hundred and two hundred and fifty working days.

The general conclusion would seem to be warranted that, compared with other kinds of labor, the hours are too long, and the months are too few for the continuous earning of an income. Consequently, the pressure must be put upon the workers at the busiest periods in such a way as to trench on their leisure and liberty. On the other hand, farm labor often insists on exemption from work during the winter portions of the year. Shorter hours of labor have become a necessity. This does not apply generally to dairying, in which long hours seem to be necessary all the year round. There appears to be no doubt, from the evidence presented, that the social and moral condition of rural labor is far better than it has been at any time within the last quarter of a century. It is doubtful whether the number of married men compared with single men among farm laborers is diminishing. The social position of hired labor on the farm in the North and West is an equality with the other members of the family. This does not, of course, apply to colored labor. The drudgery of farm labor has been very greatly mitigated, if not eliminated entirely. Furthermore, there are few occupations in which children receive a better training in industrious habits and adaptability to circumstances than on the farm.

Agricultural wages, with comparisons based on the census of 1890, are given below for five geographical divisions:

Average wages of farm labor in the United States in 1890.

Geographical divisions.	Average wage rate per month, with board.	Value of agricultural products per agricultural worker.	Proportion of population over 10 years of age engaged in agriculture.
North Atlantic	$16.32	$389	51.8
South Atlantic	9.19	177	13.8
North Central	15.83	362	25.9
South Central	11.22	211	10.5
Western	22.13	519	30.0

SOCIAL CONDITIONS.

The social condition of the rural laborer in general is declared to be in every respect superior to that of the city laborer of the same grade of intelligence and skill. On this point the evidence is stated to be overwhelming and conclusive.

The agricultural population embraces that portion whose life and labor are spent upon the land. There is some evidence to show that an indefinite but not large portion of the rural population in the United States occupies itself in the city in the summer and in the country in the winter, as in France.

Change in the character of farm labor has come about by the introduction of machinery, by the higher education of the children of the farmer's family, and by the employment of foreigners, especially of northern European peoples. In Connecticut farm labor is of a very miscellaneous character on this account. In the other New England States many of these foreigners have developed into farm owners and occupiers, thus redeeming farm lands which native Americans had ceased to desire or failed to make profitable.

One of the most hopeful tendencies in the movements of farm labor is the appearance of young men of foreign birth in the labor markets. Throughout New England and the West this is quite general, and the surplus of Southern labor, which Mr. Hale regards as a disadvantage, is to some extent drawn off into the trucking and grain sections of Connecticut, New Jersey, Delaware, Pennsylvania, and a tier of States lying immediately north of the Ohio River. This migratory disposition results in the decadence of tenant homes on the farms, as is seen throughout the South and the East. Professor Davenport notes the tendency to employ men of more advanced years in agriculture than formerly, though the bulk of the agricultural laborers are still young men, and the married portion in Illinois and Michigan are usually American born. In New England French Canadian, German, and other foreign-born families are taking up farms that had practically passed out of cultivation, thus repopulating the country with a more successful class of farmers.

The establishment in the South of cotton mills, which employ white labor exclusively, has not diminished the field labor, even among the whites, to any noteworthy extent. Factory labor appears to have been drawn from localities and conditions in which labor was waiting for the opportunity. The land has not been robbed for the sake of the factory.

In the Northwest the practice of furnishing the tenants houses on the farm in such a way as to hold the family together has been tried with advantage. The opportunities for employment are such as to afford occupation to the children, and the advantage of having a small

tract of land by which the family maintains itself under no expense is self-evident. Such a tenantry as this in the majority of cases appears to lead to the purchase of the small piece of land, on which a man can make a living for himself and family.

THE NEGROES.

Agricultural conditions among the negroes in the South show not a few signs of improvement. Negroes are buying farms in Mississippi varying in size from 40 to 80 acres. The restriction of the franchise tending to keep the negroes out of politics has had the effect of concentrating their attention upon self-improvement in economic and social conditions. They are said to take increased interest in education and in acquiring property. There are colored men in North Carolina worth from $5,000 to $100,000 each. In Kentucky negroes own 171,570 acres of land. They are averse to mortgaging lands to which they have title.

The policy among the more intelligent colored people of the South who are yet attached to the soil is to buy land and make a living out of it. The schools at Hampton and Tuskegee are of the character and type to teach the young people how to accomplish this result. The same thing may be said of the younger but in some respects more wisely located school at Winston-Salem, where the idea of a farm-village in proximity to a large market for farm products is embodied in the scheme.

The exodus of rural labor to industrial towns brings it within reach of better educational opportunities, as a rule, than were enjoyed in the country. The only illiterates in Graniteville (factory town), S. C., are those who have recently come from the farms in the surrounding country. The negroes are more useful to society on the farm than anywhere *else*. They are far in advance of the Russian serfs, and have made more progress in thirty years than any other race.

IV. SYSTEMS OF LAND HOLDING.

THE GROWTH OF TENANCY.

Much alarm has been expressed at the growing tendency toward tenancy in the United States. The fact of its growth is beyond doubt. Tables are given herewith for two of the smaller Eastern States, Delaware and Connecticut, for a period of twenty years.

Number and per cent of farms of specified tenures in Delaware, 1880 to 1900.

Census year.	Total number of farms.	Number of farms operated by—			Per cent of farms operated by—		
		Owners.	Cash tenants.	Share tenants.	Owners.	Cash tenants.	Share tenants.
1900	9,687	4,811	754	4,122	49.7	7.8	42.5
1890	9,381	4,978	628	3,775	53.1	6.7	40.2
1880	8,749	5,041	511	3,197	57.6	5.8	36.6

Number and per cent of farms of specified tenures in Connecticut, 1880 to 1900.

Census year.	Total number of farms.	Number of farms operated by—			Per cent of farms operated by—		
		Owners.	Cash tenants.	Share tenants.	Owners.	Cash tenants.	Share tenants.
1900	26,948	23,481	2,763	704	87.1	10.3	2.6
1890	26,350	23,310	2,102	938	88.5	8.0	3.5
1880	30,598	27,472	1,920	1,206	89.8	6.3	3.9

Thus far the growth of tenancy is to be looked upon as a consequence of several causes, among which are (1) the retirement, from advanced age, of owners of farms to near-by villages or to smaller farms; (2) the rise of the value of suburban lands to a level which requires more capital than the cultivating owner can profitably keep in land, thus causing him to rent land and use more of his capital in intensive cultivation of specialties for the city market. (3) The growth of farm tenancy has taken place under circumstances which have favored the transition of families from wage labor to farm tenancy, and thence frequently to farm ownership. Instead, therefore, of the progress of tenancy being regarded as an alarming tendency, it is rather to be looked upon as favorable to the cultivating tenant. It has been calculated by the statistican of agriculture in the census of 1900 that in the small State of Delaware fully 3,400 persons have risen from a lower position to that of either farm tenancy or ownership.

There are, however, other aspects which must not be ignored. Absentee ownership and a tenantry hopeless of ownership are as yet not general, at least, but rather exceptional. The growth of tenant

farming in the rich corn and cotton lands of northern and eastern Texas, for example, has been a feature of the agriculture of that State for a number of years. The original owners of lands which were distributed under State laws and not according to the Federal homestead system have ceased to labor upon them, because they have found that it is more profitable to rent their ground in smaller tracts to others, who pay either a cash rental or a large share of the crop in return for the use of the field.

TENANCY IN THE SOUTH.

It is stated, on apparently good authority, that in the cotton counties around Dallas, Waco, and the bottoms of the Brazos River, Texas, 75 per cent of the best cotton land is owned by men who live in large towns, and is farmed by a poor and shiftless class of whites and negroes who, under the strict and unceasing supervision of the owner, or his agent, generally make for the owner a handsome profit upon the present valuation. The cotton planter with, say, 2,000 acres of fertile land divides it into tracts varying from 50 to 100 acres each. Each tract is fenced and improved to the extent of a house, barn, and corncrib. This tract is leased for a year, beginning with January 1. Although the planters prefer that the tenants should furnish their own stock, implements, and seed, it is difficult to find renters who are sufficiently well equipped or have enough capital to take the land on such terms. In nearly every case the landlord is expected to furnish everything, including food and clothing for the family, until such time as the crop is harvested and sold.

The system of overseeing by the agent of the landowner is usually such as to enforce the rights of the owner in keeping the stock and implements from abuse or neglect. Nevertheless, this system of absenteeism has the seeds of economic self-destruction in it. A system of supervision does not develop but destroys efficiency on the part of the tenant. The general disposition is to lay everything to the shiftlessness of the renters. On the other hand, it is stated by one of the leading planters in McLennan County, Tex., that a properly conducted cotton farm in the neighborhood of Waco will pay from 30 to 50 per cent upon its valuation. This, however, requires the strictest attention to detail and very strict handling of the people who till the soil. He states that of about 1,300 farmers in McLennan County over 1,200 are tenant farmers. There is a general tendency on the part of landlords to increase the size of their holdings, and the men who already have the land and money are more apt to absorb adjacent tracts than they are to allow the tenant to buy land. The German farmers in this portion of the country appear to be prosperous, and are noted for remaining a much

longer time on the same farm as renters, usually several years elapsing before a change is made. One German tenant is cited who rented the same piece of ground from the same landlord for 13 years, and left him because the landlord would not sell him the farm which he had cultivated and in which he desired to put his savings. It appears, therefore, that it is sometimes difficult for renters to obtain land, even when they have the means to pay for it.

When the planter, in many parts of the Southern States, leases his ground and furnishes nothing to make a crop, he receives one-third or one-fourth of the crop. Cash rental is the exception rather than the rule. Where the planter furnishes the live stock, implements, and supplies, he gets one-half of the cotton and one-half of the corn, and deducts from the renter's share of the crop money an amount sufficient to pay liberal prices for all supplies furnished and liberal interest on the money. The result of this system is that the renters rarely ever succeed in laying by a surplus. On the contrary, their experiences are so discouraging that they seldom remain on the same farm for more than a year. They are not only unable to lay by any money, but their children remain uneducated and half clothed. The system is apparently one of the most undesirable, so far as its effect on the community is concerned, without, of course, implying any questionable motive to the owner of the land. The landowner himself is not necessarily at fault. He is obliged to be liberal in furnishing supplies and stock to the tenant, whose manner of using these resources may be the most wasteful. During unfavorable years the profit may wholly disappear or leave a deficit in his account, so that during favorable years it is necessary to make good the loss.

The tenant system or crop-sharing system, which seems to be the prevailing feature of land tenure throughout the cotton belt, is not regarded as an advantageous arrangement between the tenants and landlords, but, on the contrary, would be gladly gotten rid of for a better system if the conditions permitted it. Where the tenant system prevails, the tenant is furnished with a house, water, fuel, pasturage for his stock, a share of the fruit on the place, a garden, a shelter for stock, and storage for crops. The crop is in some cases divided as follows: One-fourth of the cotton, one-third of the corn, and one-half of the small grain goes to the landlord, the balance to the tenant, the landlord furnishing the land and stock and his share of the fertilizers. Under this system the crop, to a great extent, and the land, generally, are apt to be neglected. The tenant is desirous of expending as little labor as possible and the landlord of getting the largest crop return. The permanent value of the land is apt to be sacrificed for lack of competent supervision, and deterioration of the property in general is quite certain to grow at a more rapid rate than

under a different system of occupancy. The renter has little or no interest in the maintenance of permanent improvements. This is especially true where the contract is made for a year at a time, admitting of frequent changes of tenants and enabling them to evade the responsibilities of careful management and methods of cultivation. Consequently both the permanent improvements and the quality of the soil deteriorate under this system. The tenant is, furthermore, at a disadvantage in exchanging his crop for family supplies. He sells his corn at the lowest price to the country merchant from whom he gets his provisions in exchange, paying the highest price the country merchant sees fit to demand. This same corn which is sold early in the fall may have to be bought back from the country merchant by the tenant late in the winter at from 50 to 100 per cent advance. The economic effects of such a system are to the disadvantage of the tenant in both transactions, both as a producer and a consumer, and no system of such a character has in the history of agriculture ever led, if uncorrected, to anything but failure.

FARM OWNERSHIP.

In spite of these unfavorable survivals the ownership of farm homes is still the fundamental fact in American land tenure. In the less developed States laborers frequently aspire to land ownership. It is estimated that fully half of the farm laborers in Berkeley County, W. Va., own their homes. Land is cheap there in contrast with the value of land in Illinois, where it is stated that few farm laborers work for the ownership of land. Even mortgage indebtedness often indicates growth in home ownership of farms. It has been estimated that 50 per cent of the homesteads in eastern Minnesota are mortgaged. There is a decided movement toward taking up cheap lands in the Northwest, between the Lakes and the Pacific. Many of these settlers have sold their more valuable farm lands in the Eastern and Central States and gone westward with ample capital to buy cheaper lands. A similar process has been going on for the past few years in the Southwest. Both of these movements tend to increase home ownership.

MORTGAGE INDEBTEDNESS.

The awakening which followed the revelation of the census of 1890 on the matter of farm indebtedness had two results:

First. It showed that the burden of farm mortgages was general throughout the United States. The mortgaged homes were shown to be incumbered by debts varying from 31 per cent of their total value in Idaho to 51 per cent in Virginia.

Second. Another effect was to call the attention of the country as a whole to this condition of agriculture. In other words, it stated the

facts in the case and furnished a basis for the solution of the problem. The paying off of mortgages does not appear to have made noteworthy progress until about five years later. First came the period of marked economy on the farm, following which thousands of mortgages on Western farms were paid off during the three years 1896 to 1898, inclusive. At the Omaha Exposition a quantity of canceled mortgages were shown as a proof of the progress in this direction. "Throughout the wheat belt," says an agricultural authority already quoted, "there has been a perfect craze to pay off mortgages." From 1890 to 1895 hundreds of settlers in the semiarid West were forced to give up their farms to parties who held mortgages on them. These foreclosures in many cases had little advantage for their owners. The land was taken up by more thrifty farmers and stock men, and later was again brought under cultivation. The full force of the mortgage-paying movement, however, was to be seen in the Middle and Eastern States, where the fine crops of wheat as well as corn which followed the middle of the decade, along with the upward trend of prices, gave an impetus to the payment of mortgage debts. It has been estimated that the movement reduced the average rate of interest on farm loans in the north central States from 7.3 per cent to about 6; in the Southern States from 8.3 to 7; and in the Western States from 9 to 7.5 per cent. In the Atlantic States, where the rate of interest was already low, there appears to have been no marked change. But the year 1898 will be remembered as a triumphant one in the paying off of farm mortgages throughout the country.[1]

REDUCTION IN THE RATES OF INTEREST.

The reduction of mortgage rates of interest represented a growth in the borrowing power as well as in the paying power of those sections of the country in which it occurred. Whenever any borrower can refund a mortgage or any similar obligation for a lower rate of interest, it is proof that he has the advantage in the bargain and is making use of it. It is likewise proof that the lender recognizes that for the time being he must make concessions to the one who is using his capital.

The lower rate of interest furthermore showed that agricultural enterprise, compared with other forms of economic activity, was commanding capital in competition with manufacturing and transportation. In spite of the fact that the United States is peculiarly lacking in such banking institutions as the credit banks of Germany, Holland, and Canada, the refunding operation brought into the field of farm mortgages a much more favorable condition of credit and much more abundant capital than had been the case for a number of years. The

[1] American Agriculturist Yearbook, 1899, p. 340.

increase of the number of State banks in such States as Kansas and Nebraska prior to the amendment to the national-bank act of March 14, 1900, proved that these communities were operating largely on their own savings, independent of outside financial aid. The latest report of the Comptroller of the Currency shows that under the act of amendment referred to above there have been organized in the agricultural States of the South and West 322 banks during the eighteen and one-half months ending with September 30, 1901, with a total capital of $14,103,000.

The entire country is now in a far better position than ten years ago, in the matter of rates of interest on loans to farmers and in respect to the financial institutions which now accommodate farming districts. The investment companies which made a business of lending Eastern money on Western farms during the period of mortgaging farms prior to 1890 were often operated in the interest of neither the lender nor the borrower, but for the promoter, who succeeded in keeping up the rate of interest to the farmer and keeping down the rate of interest to the lender. Crop failures or inability of the farmer to pay usurious rates of interest brought such companies to ruin.

Kansas may be taken as a typical agricultural State which has developed financial institutions peculiar to her principal industry's needs. In one year, from September 1, 1900, to September 1, 1901, the total deposits in 427 State and private banks, which represent rural industry much as the national banks represent urban enterprise, increased their deposits by $11,291,359.73, or 39 per cent; their loans by $4,737,278.59, or 22 per cent; their cash and sight exchange by $6,843,911.24, or 42 per cent. State Bank Commissioner Morton Albaugh, reporting further, says:

> The State banks of Kansas never before have made so good a showing as at the present time. Of the $42,899,992.02 in deposits which they had on September 30, they held in cash and sight exchange $22,952,506.31 or 53 per cent, when the law only requires that the banks in towns of less than 5,000 inhabitants shall hold 20 per cent and in larger towns 25 per cent.
>
> The loans aggregating $26,550,204.05 are almost four times the banking capital, and insure good returns to the stockholders. Most of the banks in the State are conservatively managed, and there is a growing disposition on the part of the directors to give more and more attention to the management of the affairs of their respective banks. There have been few bank failures in Kansas where the directors gave a careful and intelligent oversight to the bank's management.
>
> Most of the banks are taking advantage of the good times to eliminate their real estate holdings, their furniture and fixtures, accounts and other resources, that in changed conditions must be of questionable value.

PURPOSES FOR WHICH MORTGAGES WERE CONTRACTED.

The present condition of agriculture does not, therefore, labor under the burden of mortgage indebtedness which so generally depressed farmers at as late a period as 1892–1895. This mortgage indebtedness

came into existence during a period of rapid development of railroads and spread of population throughout the central West. Railroads had been built, especially from 1873 to about 1885, much more rapidly than the advance of population required. Favorable prices for farm products made borrowing easy on the part of farmers, and a very large per cent of farm properties in States beyond the Mississippi were under mortgage by the time of the census of 1890. The investigation then made showed that from 1880 to 1889 the mortgage indebtedness of agricultural lands (acres) rose from $342,566,477 to $585,729,719. The acreage included in this indebtedness rose from 370,984 acres in 1880 to 525,094 acres in 1889. On January 1, 1890, the amount of mortgages in force on acres of land, including town lots, was $2,209,148,431, covering an area of 2,303,061 acres. The States which had more than 100,000 acres under such mortgage were Illinois, Indiana, Iowa, Kansas, Michigan, Nebraska, New York, Ohio, Pennsylvania, and Wisconsin. Special investigations conducted in 102 counties were made to discover the reasons why the mortgage debt was incurred. These counties were distributed geographically in different parts of the United States, and the results as given in the following table are therefore representative of the general conditions as to the objects of indebtedness:

Purposes for which mortgages were contracted.

Objects of indebtedness.	Number of mortgages.	Amount of mortgages.
	Per cent. 100	*Per cent.* 100
Total for 102 counties		
Purchase of real estate	54.67	56.66
Real-estate improvements	20.96	20.81
Purchase and improvements (combined)	4.50	5.09
Business	6.01	8.92
Farm machines, domestic animals, and other personal property	1.96	.70
Purchase, improvements, business, and personal property (two or more combined)	1.73	2.19
Purchase, improvements, business, and personal property (combined with objects other than farm and family expenses)	.45	.63
Purchase, improvements, business, and personal property (combined with farm and family expenses)	2.06	1.32
Farm and family expenses	3.40	1.75
All other objects	2.27	1.95
Total for purchase and improvements (not combined with other objects)	80.13	82.56
Total for purchase, improvements, business, and personal property (not combined with other objects)	89.82	94.37

EXCESSIVE INDEBTEDNESS IN 1890.

The excessive indebtedness in 1890 was no doubt partly, if not principally, the result of the speculative impulse which had seized all classes alike in the rapid filling up of the West, which followed the opening of new lands and the entrance of those vast wheat-producing States into the world's market. The growth in values of land, of labor, and of capital had been so rapid as to give the impression that

almost any rate of interest and any amount of indebtedness could be paid out of the phenomenal productiveness of the prairie soils. The rapid enhancement of real-estate values in cities and the increase of population which rivalrous railroads and steamship companies brought about by immigration agencies in Europe helped to give a magically speculative character to the whole country covered by these operations. In this state of receptivity schemes for the development of the country attracted Eastern capital, whose legal representatives did not scruple to press upon farmers, otherwise disposed to be conservative, the advantage of improvements in buildings and machinery, to be provided only by borrowing money at extraordinary rates of interest. Not a few farmers throughout the West and the South especially became involved in speculations in town properties. These conditions in a large measure accounted for the overgrown state of farm indebtedness a decade ago.

PRESENT TENDENCIES.

This vast indebtedness, however, disappeared from the field of discussion, and from being a factor in Western farm policy, almost as quickly as it came. From 1894 down to 1900 a series of excellent crops of wheat and corn and an advance in the prices of live stock occurred coincidently with a series of short crops in Europe and the occurrence of three successive wars. Meanwhile the growth of farming capital had become a feature of the very same States which but a few years before were afflicted with a heavy mortgage indebtedness. The increase of rural banking power is manifested in this tendency of capital, which has gone largely to pay for the mortgage indebtedness without having to leave the community for the purpose.[1] This is substantially the present state of the mortgage question in localities where some years ago it had reached an acute stage of financial distress. At the present time the tendencies to farm indebtedness, so far as they can be ascertained, appear to be devoid of any speculative element, and to be based on the surplus earning power of the properties to which they apply. More of the surplus wealth throughout the grain and stock raising sections of the interior is being applied to the permanent improvement of farm properties. The farmers are plowing in their surplus earnings, so to speak, just as railroads are applying their surplus to permanent improvements of roadbed, terminals, and equipment. There are, of course, exceptions enough, but no one familiar with the present status of the distinctly agricultural States north of the Ohio and west of the Mississippi can doubt the general soundness of rural development on the basis of a larger measure of financial independence than has probably been the case since the

[1] Reports Industrial Commission, Vol. VI, p. 138.

civil war. Except on territory adjacent to the larger cities, where land has a speculative value and has become too expensive for use in the normal-sized farm, there is no evidence to show that tenantry is increasing the difficulties of ownership. The indications are, on the contrary, that the rates of interest have declined so generally in the older States, for borrowing purposes on the part of the farmers, that it has become much more easy to acquire ownership than formerly.

The fall in the rate of interest may, however, be partly offset by the rise in the value of farm lands. Rise in the value of lands is apt to increase tenantry, because the farmer with limited capital will rent land and put his capital into labor, machinery, and supplies. Farm renting is thus a step in the direction of farm owning in every prosperous portion of the country. This has taken place already around cities. Here people with surplus capital have bought lands in view of the increase in value arising from increase in population.

The United States census of 1890 showed a marked increase, not only absolutely but relatively, in the number of farm tenants. In 1880, 30.93 per cent of the farm families hired their farms; in 1890, 34.17 per cent. During that decennial period there was in Ohio, Indiana, and Illinois a loss of 22,300 owning farmers and a gain of 18,887 tenant farmers.[1]

This phenomenon, the rise of values of land and the fall in the rate of interest, help to promote the migration from dearer to cheaper lands. For example, the westward migration of farmers from the central States, in order to buy lower-priced land farther west, tends toward increased ownership. This movement has reached unusual proportions in the Northwestern States. Owners of high-priced farm lands in the older of these States are selling out to richer or more contented neighbors, and are moving west and northwest, where they buy cheaper lands from proprietors who are desirous of selling and putting the proceeds into still cheaper lands still farther west and north.

A farmer in Illinois or Iowa will sell his land at from $50 to $100 an acre, and, moving into southern Minnesota, buy a new farm at from $20 to $40 an acre. The land of his new farm will be as rich as that of the old one, it is just as advantageously situated as regards the markets, and will yield as good an income. Yet the moving farmer may have made several thousand dollars by the change. In the meantime, the man he has bought out in southern Minnesota moves on into the forest regions of the northern part of the State or into the new farming lands that are being opened in the Red River Valley and North Dakota, paying from $2 to $10 for land which is often very rich. In 1900 the desire for cheap lands brought 150,000 people into the Northwestern States. New settlers have continued to come in by

[1] Political Science Quarterly, Vol. XI, No. 4, 1896.

special trains, and railroad officials have estimated that 200,000 thrifty, hard-working farmers would be added to the population there during 1901.

On the other hand, in many portions of South Dakota where farms were formerly heavily mortgaged, mortgages have now nearly disappeared. Less attention is given to flocks than at an earlier period. There nevertheless remains the tendency to run into debt, and there are not wanting those who are prepared to encourage mortgaging lands by offering liberal terms of payment. The rate of interest is almost invariably 10 per cent, and sometimes as high as 20 per cent, according to the risk run in making the loan. Exemption laws do not always work advantageously, and are in some cases detrimental to the general interests. They undoubtedly raise the rates of loans which farmers have to pay.

BONANZA FARMS AND TENANCY.

The breaking up of the bonanza farms along the Northern Pacific and the Great Northern railroads, as well as in California, has changed the system of land tenure from one of large to one of small farming. The main factor in the dissolution of these mammoth properties was the rise in the value of land. In some cases the tendency has been to take too much land for the available capital, so that increasing the number of farms would increase the productivity of the land. That this state of things is rapidly coming to pass is apparent from the stream of farmers passing westward into the Dakotas, Idaho, Washington, and Oregon. Owners of large tracts of land are either selling outright or dividing up their areas into tenant farms large enough for a single farmer to take care of. The bonanza farm has, in this case, been succeeded by tenancy. But here again it is fair to assume that tenancy will be only a transition stage between large-scale farming and ownership, a stage that will terminate when the land acquires a cash value for sale in excess of the capitalized value of the net income from renting.

OPPORTUNITIES FOR ACQUIRING LAND.

PUBLIC LANDS.

The conversion of the public domain into private property of landholders of various classes has been one of the most significant features of the history of American agriculture. The original area amounted to 1,815,504,147 acres, of which 806,532,362 acres had been alienated up to the end of 1896. The rate of alienation from 1884 to 1889 varied from 17,000,000 to 27,000,000 of acres per year. From 1890 to 1900 the transfer of public property to private ownership went on at

rates varying from 13,566.552 acres in 1892 to 8,364,300 in 1895. Since 1895 the interest of the people in acquiring public lands has received new stimulus. This is owing partly to the rise of land values throughout the middle West and in the Mississippi Valley generally; partly also to the increased emigration from the eastern half of the United States and from Europe, to occupy the lands which railroad companies have held as part of the grants from the public domain. The policy of these companies is now to sell lands to settlers in order that local sources of traffic may be developed thereby, and the revenue of the roads increased through the territory which they traverse.

It is a mistake to assume that the public domain has disappeared as a factor in the progress of land ownership by homesteaders. The records of the General Land Office show that the land disposals were 13,453,887 acres for the year 1900, as against 9,182,413 acres for the previous year (1899), or an increase exceeding 4,000,000 acres. Of homestead entries 8,478,409 acres were shown in the report of 1900, as against 6,177,587 acres for the year before.

The report for the fiscal year ending June 30, 1901, shows that there were 9,488 more final homestead entries made during the year just closed, and covering 1,180,528 more acres, than for any one year since the passage of the homestead act (May 20, 1862), almost forty years ago. Nearly one-fourth as many final entries of homesteads and acres in this last fiscal year were recorded as in the entire nineteen years following that law. The record of original homestead entries made by settlers on the public domain the past year is almost as great a surprise. These entries numbered 68,648, and covered 9,497,275 acres, an increase of 7,378 entries and 1,018,866 acres over the year before. In original homestead entries, final homestead entries, and commuted homestead entries made last fiscal year there were 111,390 entries in all, and these embraced 15,455,057.46 acres for actual, bona fide homes to American settlers.

PRIVATE PURCHASE.

The opportunity to acquire land on the part of the colored tenant farmer in the South does not appear to be restricted by any purpose on the part of the whites. On the contrary, practically all influential interests favor the ownership of lands on the part of the negro. The commissioner of agriculture of the State of Georgia cites a case of seven colored men who own farms of from 65 to 300 acres each in his own neighborhood. About 40 acres of land is considered a minimum size of a farm which an occupant with one mule or horse can cultivate, while 60 acres is considered a minimum-sized farm for separate ownership. In the southern portion of Alabama the ownership of small farms is the feature of land tenure among a large class who are considered the most intelligent farmers of that State. Here, as else-

where, farm ownership tends to intensive cultivation. They do their own work and devote themselves to their business. A similar system of ownership exists among the white farmers of southern Georgia. As a rule these farms are small and their occupants are prosperous.

In the Black Belt lands are owned in large tracts by whites who frequently employ from 50 to 150 hands or tenants. These farmers generally own their lands, live on their estates, and direct the work of cultivation by the day through their sons or overseers. It is noted that where small farms lie adjacent to the large farms the former are the more progressive of the two, especially when ownership is the common feature of both systems. The same authority above quoted states that if the owners of the large farms would sell their lands in small tracts, it would be much better for the country as a whole. At a profit of 10 to 15 per cent on the investment, however, this land is not likely to be broken up into small farms. The historical tendency to enlarge the acreage of estates rather than to reduce it has still to be reckoned with in the development of systems of land tenure in the South.

AGRICULTURAL CHANGES IN MARYLAND.

The fall in the value of Eastern lands has contributed in certain localities toward a reorganization of the system of farming, in which live stock and certain staple crops closely correlated with live stock are dominating features. Prince George County, Md., including that portion of Maryland which lies between the city of Washington and the Chesapeake Bay, was a district of great affluence prior to 1860. Land was worth $100 per acre. Large estates averaging from 800 to 1,000 acres were the rule. The civil war affected this portion of the South, as many other portions, by wrecking the estates and dislodging young men, who were highly educated, from their country homes to join the professional ranks in large cities. Meanwhile the soil has remained much the same and the cities have grown, furnishing still better markets every year, with the increase in population. Recent inquiries about lands and farm property for sale have been followed by purchasers from different parts of the country. The prices of farm lands vary now from $5 to $10 per acre, according to proximity to shipping points, conditions of land, fences, and buildings. Near cities land brings from $100 to $150 per acre. Where the owners of farms have lived in the cities it has frequently occurred that poor colored tenants have permitted the property to run down to such an extent as to be not especially profitable. A good farm in fair condition can be bought for from $10 to $25 per acre. The large estates still remain, as a rule, to be divided up. Labor is scarce, and there is a general demand for farmers. The State has done much for this locality through the agency of the Agricultural College and Experiment Station. Within

to his old home on a six months' visit. They pay him his expenses both ways, and so much a day besides, to spend most of his time in telling how successful he has been in the New World. For every countryman of his he induces to come over and buy land, the syndicate deeds him an additional acre. The plan works well. A representative of a land syndicate in the West states that the Finns, as a rule, are a first-class people for farming in the West. At home they till the soil under adverse conditions, and life generally is along hard lines. Politically, too, they are oppressed, and are compelled to do military service for the Czar outside their own small country. Living close to the soil and being unusually clannish, this is the last straw for them, and once they can be persuaded that freedom and prosperity lie over the sea, they are ready to come.

Land companies seldom if ever make any effort toward getting foreigners from the large cities of the East. They do not want them. The surplus population of Eastern cities is considered to be lazy and generally not fit for colonizing purposes after they have once had a taste of city life. Even though they might be induced to go West on land, they would soon let it run down, and this would have a bad effect on the other colonists. Many of the best settlers in Michigan are Dunkards, who migrated from Pennsylvania. They are very religious, as sturdy and thrifty as the Finns, and make fully as good farmers.

In the Northwest the available cheap lands may be divided into three classes—railroad lands, cut-over timber lands, and homesteads. The railroad lands were those originally granted by the State or Federal Government to railroad companies. These lands have been regularly sold by the railroads for many years, but the policy of the Northern Pacific since its reorganization—that of disposing of the lands as rapidly as possible, with a view to encouraging the improvement of its tributary territory—has given the process a great impetus within the last three years. The company has sold its lands in North Dakota and Minnesota in a few large tracts of hundreds of thousands of acres each at very low prices—sometimes not more than 75 cents an acre and rarely more than $2. The companies or firms purchasing these lands have generally placed them on the market at double what was paid to the railroad company. These purchasers in turn add 50 cents or $1 to the price, and sell to individual settlers or to colonies made up of farmers from the more settled regions. In the end, few of the lands actually taken for cultivation will have more than a section—640 acres—to the farm, and the usual holding is a quarter section.

The cut-over lands, found in southern Minnesota, Wisconsin, and Michigan, are those which originally were covered with pine forests. Sometimes these lands are barren, sometimes they are sandy and suited

only to particular crops, but often they are as rich as any in the State, well watered, good grass-growers, and ideal for general farming or dairy purposes.

The rate at which new farms are being brought under cultivation in the Northwest may be shown from the following figures of the number and acreage of farms in 39 counties of North Dakota for the two successive years, 1899 and 1900:

Years.	Total number of farms.	Total acres under cultivation.	Total acres cultivated and uncultivated.
1899	39,119	5,877,184	9,542,484
1900	42,024	6,623,315	11,297,758

From this it appears that there was an increase of 746,131 acres in crops, including cultivated grasses, from 1899 to 1900, and 1,755,274 acres were added in a single year to the farm acreage of this State.

ABUSE OF PUBLIC LAND POLICY.

About 50,000,000 acres of forests have been withdrawn from the public domain by proclamation for the purpose of inaugurating a more rational system of maintaining the forests for the protection of the timber from private plunder and the preservation of a water supply on which the valleys are dependent for agricultural development. These reservations have been laid out upon straight lines coinciding with the sections of the survey. They consequently include many valleys containing fertile lands not covered by forests but entirely suitable for settlement. Wherever such land had been acquired from the Government within the lines of new reservations compensation has been made by the issue of transferable land scrip entitling the displaced owners to take other Government land, acre for acre, in lieu of that withdrawn from private ownership by the forest reservation law.

So much of this scrip has been issued of late that it has become a recognized marketable product, and the current price for the same in Washington, Idaho, and other States where reservations have been made is $5 per acre. This scrip is bought by those who have exhausted their land rights as citizens to further extend their possessions, by large live-stock companies to perfect their hold upon the public range, and by railroads and other corporations who have need of certain pieces of land. This scheme of issuing indemnity scrip has made an opening for widespread abuse of a law which was thoroughly good in its intent.

Another means of preventing the agricultural development of the public lands is by making entries covering agricultural lands under

such a law as the timber and stone act. In this way corporations get first possession of public lands and add immensely to the cost which the original settler has to pay.

During the year 1900 there were nearly 2,500 entries made under the timber and stone act. These entries covered an area of about 300,000 acres, and brought the Government $750,000 in cash. The law provides that this land can be bought by any citizen in quantities not to exceed 160 acres and at the rate of $2.50 an acre, if such land is proven to be more valuable for timber or stone than it is for agricultural purposes, and is not available for mineral exploitation. There does not seem to be any great need for such a law. It is seldom used legitimately, for nearly all of the entries made are for the purpose of controlling land for some specific purpose, and not for getting timber or for quarrying stone. In Wyoming a number of stockmen have used this law to increase their privileges upon the public range. In Colorado the law has been used by railroad and other corporations to secure land for industrial enterprises, or for small town sites which the companies desired to control.

This seems to be a favorable time for a revision of the land laws of the United States looking to the promotion of settlement by bona fide occupants of the land. The present system is full of contradictions, and abounds in confusion of interests. Land entries are made under several different acts, any one of which may be extensively used to filch the public domain and postpone indefinitely the progress of the effort to break it up into homesteads.

The public domain is injured agriculturally in another way, namely, by close grazing where there is no restriction. The pasture value is thus exhausted, and the land's restoration for farming purposes is then a still more difficult matter than before. Overstocking is to grazing lands what continuous cropping is to cultivated lands. It exhausts it to the utmost limit. Forty millions of public lands not fit for cultivation are fit only for grazing. There should be some restrictions enforced to prevent destruction by overstocking.[1] The plan that meets the need of the herdsman and the settler alike is that which provides for leasing grazing lands adjacent or contiguous to arable lands. This would constitute a sound economic basis for the development of stock raising in connection with the cultivation of irrigable lands.

The competition among stockmen has resulted in a struggle for free grass on public lands. The recent form of the conflict between cattle men and sheep grazers for this land has led to the proposal that the Government should lease the public grazing lands in restricted amounts for a term of twenty years to the highest bidder. Under such a scheme, as has been pointed out by those familiar with the conditions, it

[1] Reports Industrial Commission, Vol. X, p. 1065.

would be possible for large and small owners of herds alike to avail themselves of this opportunity. As a matter of fact, however, here, as in other fields of enterprise, community of interest would most probably under this scheme lead to the combination of herd owners for the purpose of controlling an entire section of country, thereby eliminating the small owner entirely and postponing the breaking up of these lands into small pastures attached to homesteads.

The real issue, therefore, into which the present arid-land question resolves itself is this: whether it is the homestead interest or the cattle interest which is to be favored in the disposition of these lands.

Those who have investigated the workings of the desert-land law find this to be the general view on the subject: Instead of its resulting in the building up of homes on the arid domain of the United States, an element of fraud has made the law an agency for monopolizing the land by powerful combinations of land grabbers, who have succeeded in evading the spirit of the law in their own interests. Every effort appears to have been made by them to postpone the settlement of the country for which the public lands were intended. In ninety cases out of one hundred, it is stated that the provisions of the desert-land act have not been complied with in securing title. In fact, the provisions of the law have been repeatedly violated and title has been secured in numerous cases by perjury.

The accessibility of public lands to private settlement as homestead possessions has long been the pride of the country's land history. With the growing scarcity of land, however, various interests have arisen which have made it their business to block the way to breaking up the public domain. As a rule, these obstructive tactics have always been displayed by people who have been interested in raising beef cattle on free public pasture in competition with the farmers of the east and central West. The Federal Government has, therefore, wherever such operations are tolerated, put itself in the position of giving an immense premium to the production of cattle on these unsettled domains. The desert-land law originated in 1875 for the purpose, it is said, of enabling a cattle company in California to secure a large tract of land under the pretense of reclaiming the Government domain. So successful were these schemers in getting free pasturage that a similar law of a much more generous character was passed in 1877, constituting the desert-land act as it now stands upon the statute books. Since 1877 there have been 36,951 original desert filings under this law in the arid States, covering 9,140,517 acres of public land. Of these filings only 10,912 have been proved on a title conveyed by the Government, these final proofs covering 2,674,695 acres.

This system of entry has proved itself to be one of the greatest obstacles in the development of land values, as well as of land culti-

vation. It would be the blindest economic policy to permit such a system to perpetuate itself at the expense of the States in which it has already gotten a strong footing under the arid-land act. The progress of irrigation in the arid-land regions has converted the almost worthless grazing lands into orchards of greatest value in the development of the valleys only recently overrun by cattle. Where the free-pasturing interests are influential with the State governments it appears that State control of public lands is advocated. This proposition involves the idea that while the United States should retain title to grazing lands, it should intrust the leasing of them to the State authorities, who are supposed to be better judges of the necessities of the case than the officials of the General Government. This is, however, nothing but a continuation of the scheme to get something for nothing at the expense of the people of these States as well as of the national property.

If the homestead policy of the United States is to prevail over the monopolizing tendency in the control of arid lands, it is possible to provide a plan by which the live-stock interest may be developed in connection with the homestead as it has already been developed in other parts of the country, and must ultimately be developed everywhere as rapidly as the range business gives way to the increase of farm lands.

This plan proposes that each person, meaning corporation as well as individual, owning, occupying, or cultivating a 160-acre farm shall have the right to lease four sections of 2,560 acres of grazing land, these leases to be made from year to year, the rental paid to be nominal, say 2 cents an acre, and the land to be always subject to homestead entry by any settler who may desire the same, permission to be given to fence individually or in common, and protection afforded the lessees from depredations by live stock owned by others. Such a leasing system as this would make a pasture an appurtenance of each ranch, no matter whether it be a homestead of 160 acres or an immense holding by some nonresident corporation.

But in every case the disposition of lands according to this law should be made a Federal function. Under such a system the irrigation of arable lands could be carried on, and a mixed development of agriculture and grazing would tend to build up such communities with unusual rapidity and permanence. This proposal would not, however, be adopted without opposition. As desirable land becomes scarcer the struggle for free range pasture induces the big cattle companies to keep back the movement of the settler toward the interior. This may be done by employing persons to prove up homesteads, which are immediately brought under the control of the cattle corporations, thus effectually thwarting the national purpose in inducing population to enter upon this last and in many respects most desirable portion of the public domain.

There is, indeed, no public question which relates to the unexpended balance of public lands that is more entitled to the consideration of the National Government than this one, involving as it does the threefold issues of the homestead development, the struggle of the cattle corporations to utilize the public lands for free pasturage for years to come, and the irrigation of these lands, whereby they may be opened to the influx of a waiting population of farmers.

V. THE RURAL EXODUS.

There probably has never been a period in the world's history, certainly not in the New World's history, when the product of each unit of rural population sufficed to support so large a number of the other members of society besides supporting himself. Rural exodus of surplus labor has helped rather than hindered the attainment of this result. If such be the case, then not only has it contributed toward the increase of the economic income of rural life, but also resulted in increasing the command of the nonrural population as a whole over the products of rural labor.

In the United States rural exodus to towns and cities is to be distinguished from the movement of population from one rural section to another. Both are natural results of two economic influences—the opportunity to improve one's income by turning from farming to trade, transportation, and industry, and secondly, the desire to acquire better and cheaper lands whose value is likely to advance with the progress of the community. These factors reduce themselves to one national characteristic, namely, the readiness of the people to adapt themselves to new opportunities.

The effects of this change upon farming have been twofold. First, it changed the character of farming by increasing the interdependence of farmers. This is illustrated by the practice of having a traveling steam thrasher instead of thrashing the grain with the farmer's own machinery during the winter. Secondly, it obliged the farmer to abandon much land that under new conditions no longer proved sufficiently attractive to be retained under cultivation. Under this category come the abandoned farms of New England.

Among these general considerations there are certain special influences which have caused rural exodus, such as the absence of families of wealth and social standing in the community, the seasonal demand for labor in contrast with all-year-round employment elsewhere, the absence of schools for children in the country of a grade and extent to compare with those in the city, longer hours of work, absence of ready money for personal expenditure, and lack of amusement, of religious advantages, and of convenient means of communication. Improved

machinery has been first a result and then a cause of rural exodus. The opening of opportunities for employment of girls and boys in factories and in mercantile establishments has greatly added to this urban access of rural population.

ABANDONED FARMS.

Abandoned farms or untilled farms are peculiar to portions of the country where great economic changes have for the time being, if not permanently, put farming at a relative disadvantage. This has been the case in portions of the East and the South, especially on the Atlantic slope from Canada to Texas. Likewise, in the semiarid West tracts have been settled and abandoned within the last 20 years for a similar reason. The difficulty has been that of adjustment to new conditions—new levels of prices, new competition, new demands upon the output, and the organization of the farm itself.

Abandonment of land for farming purposes may be the result of one of several causes. The land may be in itself capable of affording a living to its occupants, but there may not be enough occupants to cultivate it. This has been the case in many portions of New England. The secretary of the State board of agriculture of Rhode Island reports that neglected or untilled farms are found in every county in that State; that these nonproductive farms are now succumbing to the encroaching forests without yielding anything to the welfare of the Commonwealth. "Some of these farms," he states, "left to decay and weeds, were once the pretentious homes of happy and contented households. They were not deserted because they were nonproductive. Death, in many cases, was the sole cause. After the death of parents, the children, who were already settled and otherwise employed elsewhere, permitted the old home to become the abode of strangers, or worse, to decay. Most of these farms, if not every one, will yield a better living than thousands in cities are compelled to accept, and a living, bare and scant as it may be on a farm, is better than a similarly contracted life in the city."[1]

The same official authority states that in some parts of Rhode Island, since the census of 1895, the number of neglected farms has decreased owing to purchase of land—contiguous farms for pasture or game preserves—while in other places the number of farms abandoned, as far as occupation and tillage are concerned, has increased.

The untilled farms in Rhode Island are to be found in every one of the five counties and in seventeen different towns. At the date of November, 1900, the whole number of such farms was 349. Of these, 251 had buildings on them, and 98 were without buildings. The total

[1] Descriptive Catalogue of Rhode Island Farms for Sale, November, 1900, p. 4.

acreage included in the whole number was 30,313, of which 12,044 were classed as "tillage," which presumably means suitable for cultivation; 1,518 acres were suitable for pasture; and 16,751 acres were woodland. The valuation set upon these farms, that is, the price at which they were offered for sale, amounted to $313,900. The board of agriculture had prepared this statement of the conditions by the canvass of an efficient and capable chief clerk of the State census of 1895. He had visited every farm reported in the official catalogue of untilled farms, and made his report from personal observation and inspection. The catalogue in question contained 31 photographs of farm properties.

This detailed statement of the method of calling the attention of the public to the opportunities of acquiring land is made in order to show that it is practicable for people of small savings to acquire land within convenient reach of towns, churches, schools, mills, and other agencies on which a farmer is dependent. The price at which these lands can be bought is remarkably low. To give a few instances, a farm of 300 acres is offered for $800; another of 300 acres for $2,600; another of 125 acres for $2,700. The average price of these untilled farms is a little over $13 an acre.

The use to which such untilled lands may be put must require less labor and capital than tillage, consequently pasturage has succeeded tillage in many portions of New England, as it has in old England. In certain localities of the South, both in the tide-water regions and in the mountainous sections, something of the same result has followed from the withdrawal of the younger generation from rural industry for lumbering, mining, transportation, and mercantile pursuits.

REOCCUPATION OF ABANDONED FARMS.

Valuable light is thrown on the methods and results of bringing the abandoned farms of New England back to occupancy by the descriptive catalogues of such States as Massachusetts, Rhode Island, New Hampshire, and Vermont. The history of this movement in Massachusetts began in 1891. Efforts were made before that in New Hampshire and Vermont to secure the reoccupancy of farms in those States. The Massachusetts crop report of October, 1899, made inquiries as to whether the number of deserted farms had increased or decreased in the previous decennial period. The replies indicated a decrease, but gave no comprehensive information. The State bureau of statistics of labor succeeded in collecting a number of statistics about abandoned farms in 1890. There were then in existence 1,461 such farms, 72 with buildings and 689 without buildings; 3.45 per cent of the total farm acreage was in abandoned farms, and the assessed value of abandoned farms was 1.15 per cent of all the farms. The average size of aban-

doned farms with buildings was 86 acres; without buildings, 87 acres. The average value of abandoned farms with buildings was $894; without buildings, $561. The average value of the buildings on abandoned farms was $337, being much less than the average value of buildings upon farms under cultivation. Much of the abandoned land could be bought for less than $10 an acre. The board of agriculture reported in January, 1890, that applications for information regarding such property were numerous, and applied to the legislature for a small sum of money to expend in order to collect information and inform the public in answer to these inquiries as to the actual state of these properties. Precisely a year later the subject of abandoned farms is reported as having been much discussed. The secretary of agriculture states that "they are in retired locations, mostly among the hills. Some of them are ideal situations for summer residence of the well-to-do, others are adapted to specialties in agriculture."

New Hampshire had already pursued a plan which was recommended for adoption in this case in order to bring population back to the land and enhance the value of the productive property. The act of 1891, (chapter 280) authorized the State board of agriculture to collect and circulate information relating to abandoned farms. This law remained in force for 10 years. The method pursued under this provision was to send a circular to the assessors of the several cities and towns, quoting and explaining the law, asking them to return on an inclosed blank the names and addresses of persons having control of property of this description. Returns were received from but 7 of the 351 cities and towns, and 135 of the 344 towns reported the names of 887 owners or agents. The method of collecting information by a circular letter was continued until 328 descriptions of property were obtained. The average area of these farms was 115.35 acres; the average price asked was $1,675.78. The catalogue made up out of these descriptions was in great demand, applications having come from nearly every State in the Union, and from Canada and England. By actual count 1,118 requests were received by mail the first six weeks. Many letters of encouragement were received and hopes expressed that good results would follow. A second edition of the catalogue was required in less than a year. A third edition followed before the end of 1892; a fourth in November, 1893; a fifth edition in July, 1895. Further individual effort put the board of agriculture in possession of the names of 541 owners which had not been reported by the assessors in 1891. Altogether, down to September, 1901, there were different editions of catalogues of abandoned farms issued varying from 1,000 to 3,000 copies per issue. The total outlay during this period, from 1891 to 1901, was $3,769.05 out of an appropriation of $5,000 available for the collection and circulation of information relating to abandoned farms.

In summing up the results of this effort to bring abandoned property back into productive use certain important facts are worth noting in connection with the demand for this character of property and the use to which it was put. The descriptive catalogue of September, 1901, for Massachusetts states that out of 331 purchasers, 78 of whom are not reported as to their residence, 188 resided in Massachusetts, 18 in New York, 14 in Connecticut, 6 in New Hampshire, 5 in Vermont, 4 in Rhode Island, and others varying from 1 to 3 were from other States of the Union, and 1 from Nova Scotia. Two hundred and eighteen purchasers out of 251 whose residences are specified were from the New England States. This would indicate that the market for such property is largely local, or at least the land is more apt to be bought by people in that section of the Union in which the property lies than by persons living at a distance.

The names of the purchasers, the official report states, would indicate that most of them were of American parentage. It does not appear probable, therefore, that this opportunity has been made use of by foreigners to acquire land.

Out of the 331 farms sold for intended use, purchasers specify the object of purchase for 233 of them. One hundred and twenty-three purchasers desired the property for farming purposes; that is, more than half intended to use them for cultivation. Twenty-eight bought for a home, 16 for an investment, 16 for summer residence, 15 for the wood and timber, 10 for poultry raising with some farming, an equal number for dairying, 9 for poultry raising, 3 for sheep raising, 1 each for cranberry culture, floriculture, and for raising hay. These figures prove that the lands have their principal use in agriculture, and that in the judgment of the purchasers their cultivation is not regarded as unprofitable. The list, moreover, suggests that there is an encouraging variety of uses to which these lands have been put.

There is no doubt that sentiment has played an important though subordinate rôle in this effort. Purely economic considerations have not been the only factor in repeopling these waste places of the country. One of the most frequent expressions received from those who have bought these lands is that they were led to it by a desire to "get into the country," either from being tired of the city, from poor health in town, or on account of some ailment which, while not incapacitating them for work in the country, had still put them at a disadvantage in the competition of the city industries. A most frequent enjoyment is indicated in the possession of live stock, in the extent to which their surroundings have been improved by the planting of trees, and the improved health of the members of the family by living in the country. There is still apparent among these purchasers the healthful belief that the city for them was not the right place to bring up their boys. The desire to purchase for the purpose of making a home for the family

is manifest, and is one of the important factors in restoring these untilled lands. In not a few cases intensive cultivation and stock raising has resulted most favorably for the purchaser. In other cases he has bought additional lands lying adjacent to his own and so extended his proprietorship.

It must be remembered that Massachusetts is an industrial rather than an agricultural State. There are within its 8,177 square miles of territory 33 cities and 320 towns. The business of supplying milk, butter, eggs, fresh fruit, and fine vegetables to these towns falls largely upon the farmers of the State. Among the disadvantages complained of in some cases by purchasers of these so-called abandoned farms is distance from the railroad. Transportation facilities are much more developed in Massachusetts than in most other States, especially as regards the intermunicipal electric lines. It remains for these agencies to adapt themselves to the needs of farmers in their relation to the city markets, somewhat as has been done in the case of the trolley lines of Cleveland and other northern Ohio cities.

EMIGRATION TO THE WEST AND SOUTHWEST.

Emigration from the Eastern and Central States to the West is still active. A report from the Northwest says:

"These people, who go in large colonies, small groups, and by families, are native Americans (mostly from the Eastern and Southern States), who have sold their small farms in order to buy large ones in a new section. For the money which they have received for their small holdings in the thickly settled parts of the country they will be able to buy many acres, which will allow the parents to leave a farm to each child."

There is a difference between this movement and that which in the early eighties gave so large a population to the Dakotas. Then the home-seekers took up Government lands, and many had to mortgage their property either for farm implements and stock or for food supplies until they should be able to raise a crop. A series of bad years brought disaster to a large proportion of the settlers, and when the price of wheat fell thousands abandoned their farms, being unable to support themselves and pay high interest on their mortgages. The people who are now pouring into the Northwest are all experienced farmers, and they have money with which to buy good lands and maintain themselves comfortably until they can harvest profitable crops.

The enormous increase in the cultivated acreage that followed the great invasion of the Western States caused a long period of low prices for farm products, especially for wheat, but for several years the growth of population has been out of all proportion to the growth of productive acreage, and the time can not be distant when the demand

for breadstuffs will be such as to make agriculture even more profitable, in spite of the long haul by rail. Far-seeing capitalists are said to have bought thousands of acres of the abandoned farm land in the Dakotas. It is estimated that the immigration into the Northwest from other parts of the country this season will reach not less than 200,000 persons.

The extent of this movement of home-seekers to the Northwestern States may be inferred from the fact that during the period from February 12 to April 1 fully 25,000 people passed through the St. Paul gateway to their new homes in this part of the country. In certain cases they moved in colonies, requiring a dozen trains to carry their effects. Immigration has not confined itself to the States mentioned, but has also affected Minnesota and Wisconsin. The St. Paul Pioneer Press reports thousands of immigrants yearly for the last several years, and an advance of land values to the extent of 100 per cent in seven years.

The Northern Pacific Railroad has about 4,000,000 acres of unsold land in Washington. Between the head of the Great Lakes and the upper Pacific coast of the United States there is enough unsettled territory to reveal the possibilities of increasing the volume and variety of traffic on the railroads serving these sections. The far-sighted policy involved in encouraging immigration into this territory is partly responsible for the recent struggle for the financial control of the transportation lines between the Pacific and the Lakes.

The immigration to the Southwest from the older States north of the Ohio has broadened the basis of agricultural industry during the past year to an extent that only the participating railroads have come to appreciate. According to the statement of the vice-president of the Atchison system, the immigration of farmers into the country served by that line has been greater during the last ten months than it was during the previous ten years. The people who are taking up farm land in the Southwest are men and women born of foreign-born parents, who are looking for land of a low price, such as their fathers found when they arrived in the central West a decade or two ago. These lands have been hitherto in the possession of people who obtained them from the Government. They are now passing out of these first hands into the proprietorship of the producer. The Atchison Company, together with the Southern Pacific, has been making systematic efforts to attract people to these lands who understand how to farm.

THE TREND TO NONRURAL INDUSTRIES.

Possibly the trend to nonrural occupations is primarily caused by the tendency on the part of the rural population to increase faster than its opportunities for rural employment. If so, then, and to that

extent, there is nothing alarming in it. More and more, as the country improves its conditions, the movement from the country becomes a question of natural differentiation of the surplus population of the rural districts.

One of the most potent factors in emptying the country of its working population and centralizing it in the cities has been, and still is, the policy of railroads to lower the through rates in freight and maintain as high as possible the local rate from noncompetitive points in the country to competitive centers, thus putting small industries at rural points at so great a disadvantage in freight rates as to either force them out of business or into competitive centers. This factor, probably, more than all others combined, has drained the rural districts of their small industries and deluged the cities with their surplus populations, from which arise their social problems.

REMEDIES FOR URBAN CONGESTION.

The remedy for urban congestion, so far as the rural population contributes thereto, is partly educational and partly economic. Both are fundamental and not incidental. They go together in the State's policy of the application of its resources to strengthen the weaker communities of the commonwealth. Massachusetts, for example, takes care to maintain the excellent character of its hill-country schools to prevent deterioration by desertion of population. On the contrary, in New York and Pennsylvania the rural exodus to cities and towns has been stimulated by the none too liberal policy of some State legislatures toward the rural schools. If cities gave no better educational advantages to children than many country children have to put up with, families would desert such a city as they would a sinking ship. The objections that city representatives in the State legislatures make to a more liberal use of the State funds on country schools is shortsighted. If the poorer portions of the country are allowed to struggle along until only the old and impotent are left, the cities which force such a result will have to deal with a surplus population displaced from its natural employment by sheer intellectual starvation, only to swell the ranks of the unemployed and to make the struggle for life in the city all the severer and sadder.

REMEDIES FOR RURAL ISOLATION.

Remedies for rural isolation are primarily social in their character. Anything that will minister to the resources of rural society and intensify its self-helpfulness and its sense of solidarity will go far to lift the incubus of isolation from rural life. The loneliness of farm life has been considerably reduced by rural mail delivery. It has been still further lessened, especially in Western communities, by the

introduction of the telephone. The chief obstacle to the wider use of this great modern convenience has been the high rates charged by the regular companies. Several plans to obviate this difficulty have been tried. The simplest is the actual building of a line and the installation of a small circuit by those who wish to use it. Groups of Western farmers have themselves cut and set the poles and strung the wires for their own line, and after buying receivers, insulators, batteries, and other material, have divided the cost and shared the expense of maintenance. Lately another plan has been tried with excellent results in a number of Wisconsin towns. A stock company is formed of those who desire to use the service. The shares sell for a uniform price of $50—the average cost for installing each telephone in a good exchange; but no stock is sold to anyone except those who rent an instrument, and only one share is allotted for each receiver in use.

The charges are so regulated that the stockholders receive a dividend of 1 per cent a month. This is applied to the reduction of the regular rental. In one of the Wisconsin towns, for instance, the rent for a telephone in a business office is $2.25 a month, and in a residence $1 a month. The dividends average 75 cents a month, so that the actual cost is only $1.50 in an office and 25 cents in the home. This is less than half the usual cost.

If we add to this the advent of the electric railway into the country to connect towns and villages, and the further improvement of highways, there is no reason to doubt that the tide of population will in time turn country-ward, as an extension of the suburban tendency now so conspicuous in the decentralization of the city's population.

VI. EDUCATION.

PUBLIC SCHOOLS IN RURAL DISTRICTS.

Evidence on the state of public education in rural communities shows that there is a great deal of what might be called miseducation, both in quantity and quality. The criticism is frequently made that the course of study is not only too short and lacking in coherence and continuity of subjects, but is also occupied with subjects that have a very remote relation to the demands of agricultural life on the youth of the country. Variety of subjects has apparently taken the place of simplicity and directness in educational purpose.

The average amount of schooling received by each individual of the population, according to Dr. William T. Harris, United States Commissioner of Education, was 3.32 years in 1870, and in 1897 it was 4.94 years. The North Atlantic States advanced from 4.98 in 1870 to 6.50 in 1897; the South Atlantic, from 1.20 to 3.08; the South Central,

from 1.09 to 2.83; the North Central, from 4 to 5.90, and the Western States, from 3.46 to 5.54. Per capita expenditure in 1897 for the United States was $2.62; for the North Atlantic States, $3.62; the South Atlantic, $1.19; the South Central, $1.02; the North Central, $3.08; the Western, $3.49.[1]

Significant evidences of improvement in country schools are seen in the better class of buildings, in better supervision, and in the lengthening of the period of instruction. A witness, speaking for New Hampshire, says that children usually attend until the age of 16 or 18 years, especially during the winter months. Another, in speaking of Ohio schools, says that few children fail to attend up to the age of 12 or 14, for a period of six months, and many continue for a shorter period during the winter to the age of 16 or 18. For New Jersey, it is stated that the school facilities are fairly satisfactory; attendance is compulsory, but not well enforced, and an insufficient amount of attention is given to the principles of agriculture and to nature study. Throughout the South, it is evident that although appropriations have increased rapidly in ten years, the school term is not regarded as long enough, and that politics interferes at times with the efficiency of the public schools. Illiteracy among the whites amounts to much less than among the negroes. City attendance is much more regular than in the country. It is the opinion of Mr. Harry Hammond, of South Carolina, that the common school system has had an unfavorable influence in that State upon parental responsibility for the education of children.

President Dabney, of the University of Tennessee, states that the education now given is not of the right kind, in that it disqualifies for business and manufacturing and tends to encourage the young to enter clerical and professional pursuits. The chief lesson of the past century regarding education is that it increases the wealth-producing power of a people in direct proportion to its distribution and thoroughness. The development of the resources of the South are thus directly dependent on its use of educational opportunities.[2]

Free conveyance in Massachusetts has enabled thinly populated districts to concentrate their resources and thereby improve the character of the instruction. This has been a necessity of new conditions, arising partly from the decline in value of property and partly from the scattered character of the rural homes. In the West consolidation of districts has been brought about by the desire to establish schools of a higher than primary grade. Both of these developments point to the determination on the part of State authorities that the character of the rural schools shall not be suffered to deteriorate.

[1] Reports Industrial Commission, Vol. XV, pp. 4–7.

[2] Reports Industrial Commission, Vol. XV, p. 193.

NATURE STUDY.

Evidence on this subject is a unit on the question of the desirability of nature study in the educational training of the child living in the country. What and how to teach the child is now the most important part of the problem. Its solution, it is agreed, depends in the last analysis on the tact and good judgment of the teacher. The plan followed provides outline studies of a topical character, with suggestions as to method of procedure. The time set apart for nature study is, in the best methods, not devoted to set recitations, but to the free search on the part of the pupil for materials in plant and animal life found near by. Nature study has materially changed the method of instruction and the character of the teacher required, by dispensing with text-books and training the pupil not to memorize, but to observe. "The thing we need more than anything else in industrial education in agriculture is a differently trained teacher. We shall never transform the rural population as we would like to," says Professor Roberts, of New York, "until the teacher who goes into the school has a knowledge of and is in sympathy with plant and animal life as we find it on the farm, in the woods, and in the garden."[1]

But the collection of a mixed lot of specimens is not the aim or the end. It is not how many specimens they get, but how much they know about them that is of value. In collecting material of this kind the student furnishes, with each plant collected and preserved, the answers to a prepared list of questions. The following sheet is an example.[2] These answers are numbered the same as the plant, and filed away, or perhaps inclosed with the plant in its folder and kept there.

1. Common name.
   (Scientific name also, if you can find it.)
2. Date.
3. Locality (city, county, State).
4. Habitat: In what kind of soil and relation to water supply?
5. How numerous is it in this locality?
6. What other plants are associated with it?
7. What is its value, or what damage does it do?
8. What variations in size and appearance do you find? Give measurements.
9. What kind of roots has it and how deep do they go?
10. Is it annual, biennial, or perennial?
11. Any interesting facts about it?

Collected by ——— ———.

By assigning topics for collection the pupil is kept looking for something definite. Such topics vary in nature and difficulty with the age and ability of the student, from oak leaves, burs, acorns, tendrils,

[1] Reports Industrial Commission, Vol. XV, p. 219.

[2] Missouri Board of Agriculture, Monthly Bulletin, Vol. 1, No. 4.

stone fruits, or bulbs, through any series of increasing complexity. The end to be kept in view is the guidance of the pupil to search carefully and see everything down to details. Such instruction not only adds a new interest to study, for the youngest as well as the oldest, but in reality gives a new foundation to farm life. In this its far-reaching value consists.

AGRICULTURAL SCHOOLS AND COLLEGES.

Agricultural colleges still reflect the ascendency of either the mechanical or the scientific over the practical aspects of agricultural problems. It is stated that in New England these institutions devote relatively more attention to the mechanical arts than to agriculture, thus making them the recruiting grounds for industrial instead of agricultural pursuits. A remedy for this perversion of purpose is to be found in moral rather than in instructional changes. Enthusiasm for agriculture is regarded as lacking. The substitution of the classics for agriculture, or the preponderance of the former in an agricultural college, necessarily results in the undervaluation of agriculture as a skilled pursuit. Nevertheless, it is conceded that, in spite of mistakes made in the earlier period of development of agricultural colleges, the present tendency in agricultural education is much more closely in touch with the problems of farming. In many portions of the country farmers' institutes have brought the faculties of agricultural colleges into closer contact with the farmer himself, and caused each to have a better understanding of what the other is working to achieve. In Pennsylvania, representing the East, and in Michigan and Minnesota, representing the West, these institutes have revolutionized the relations of agricultural colleges to the farming communities. In the first place, they have made the collegiate instruction less technical and more practical, and, in the second place, they have shown the farmer that the teacher was master of the essential principles of the business of farming, about which the farmer himself was technically ignorant. At the present time it is probably safe to say that the benefits of agricultural education in the older States are grossly underestimated except by those intimately acquainted with the actual results. Schools of the type of the Cornell College of Agriculture in New York, and of the State college at Madison, Wis., represent the more complete adaptation of education to agriculture in the United States.

Two leading difficulties in the way of introducing the subject of agriculture into the common-school course are represented to be the lack of proper text-books and the want of training on the part of teachers. Another difficulty still arises in requiring one kind of instruction for country children and another for town children, when both may be in attendance at the same school. Where agriculture

has been introduced into public-school courses, teachers have found the subjects popular and profitable, and have sought the summer courses at normal schools and universities the better to prepare themselves. At the University of Missouri, for example, out of 240 students taking summer courses, 65, most of whom were teachers in rural schools, took the work in agriculture.

Present developments in agricultural colleges indicate not only an increase in facilities, but a greater degree of adaptation to the solution of the problems of agriculture and of mechanical industries.

The reports of the presidents of the agricultural and mechanical colleges for 1900 show a decided increase in instructors, students, property, income, etc., as well as the inauguration of new lines of work. A considerable number of the institutions have established short courses, ranging from four weeks to two years, in agriculture, the mechanic arts, dairying, domestic science, etc., for the benefit of persons who can not afford to take a regular course. These courses are well attended, showing that they meet a real need. Another way in which these institutions are enlarging their usefulness is by taking up farmers' institute work. According to the reports for the year ending June 30, 1900, 35 of the institutions took part in institute work, thus aiding in the instruction of many thousands of practical farmers.

A notable step has been taken by the Mississippi Agricultural and Mechanical College, the Clemson College of South Carolina, and the North Carolina College of Agriculture and the Mechanics Arts, in the establishment of courses of instruction in textile industry, with special reference to the manufacture of cotton fabrics. Special buildings of cotton-mill design have been erected and equipped for the practical instruction of students.

The number of students pursuing courses of study in agriculture in land-grant colleges has increased from 4,390 in 1899 to 5,035 in 1900; the number in engineering from 6,730 to 8,341; in household economy from 1,573 to 1,868; in veterinary science from 646 to 1,167. The number of students taking dairying courses was 1,215, and the number reported as receiving instruction in military drill was 12,800. The income of the institutions was reported as $7,111,749, an increase of nearly half a million dollars over the amount for the preceding year. The amount of Federal aid received under the acts of Congress approved July 2, 1862, and August 30, 1890, was $1,844,177, an increase of about $75,000; the State appropriations amounted to $2,916,837, an increase of $346,410. The remainder of the income was derived from fees, invested funds, and other miscellaneous sources.

A more thorough review of the relation of educational agencies in the United States to the farmers shows that the land-grant colleges had been established for more than 30 years, and the Federal experi-

ment stations for fully 11 years, without having succeeded in effecting anything like the mutually helpful service which these agencies were intended to bring to the practical development of farming. The report of the director of the agricultural experiment station of the State of New York (Bulletin 159, 1900), speaking of legislative efforts to aid the farmer, says it was found, in going among the farmers of that State, "that the majority of farmers had not been personally touched by these great enterprises. There seemed to be a lack of actual contact between the farming body and the teaching body, and this is due to the fact that much of the teaching and experimenting are necessarily too advanced to appeal to the general farmer. It became plain, therefore, that the purpose of the legislature could be best subserved by teaching the individual farmer in elementary matters. Scientific knowledge is far in advance of even the best farm practice. The farmer must be awakened and educated." This conclusion was arrived at by the effort on the part of the board of the State to aid the farmer to solve his present-day problems. In order to ascertain what these were, the college authorities went to the farmers and held meetings in order to find exactly what sort of help the farmer was in need of. After ascertaining the particular class of problems whose solution the New York farmer was bent upon, a series of plainly worded and amply illustrated bulletins was sent, containing summaries of conclusions reached by the central experiment station and from other sources. Thus this system of aid resulted in the solution of special problems rather than in the diffusion of general principles. This policy has in every way justified itself. It has furthermore served to indicate the direction in which and the methods through which the State can encourage its citizens to restore its fundamental industry to a larger measure of prosperity.

The older theory of agricultural education proceeded on the assumption that you must educate the farmers' sons and daughters in order that they might not leave the country. It was presumed that a collegiate or other education was all that was necessary to make the country attractive to the younger generation. The consideration was overlooked that the educated young man or woman was more likely to see how superior the social life of the city was and how much larger its opportunities were than those of the country. The education these young people received had the unexpected effect of revealing the comparative unattractiveness of rural life to such an extent as to detach the students from the farm, thereby stimulating the very tendency it was hoped to counteract. One effect of this discovery was to change the nature of the agricultural colleges themselves. The general agricultural education which did not specially prepare a young man or a young woman for anything in particular connected with farm life has given place to a much more special training. Now the young men

and women, but young men especially, take short courses in dairying, in the management of orchards, in live-stock feeding, etc. It has come to appear to the young man that the agricultural schools should, and now do, in part, accomplish for him very much what a business college accomplishes for the young man who wishes to engage in business; namely, it prepares him to earn a better income than he formerly could command. The general agricultural training for the great majority of youths involves an outlay of time and money. This general training has tended more and more to take the form of a liberal or a technical training and only partially accrues to the benefit of agriculture. In the 64 agricultural or land-grant colleges in 1898 there were 31,658 students, only 4,181 of whom, or 13.2 per cent, were in the agricultural courses.

Agricultural colleges, until quite recently, constituted the second story of a system of education with no stairway between the first and second floors. This stairway can only be provided by a more systematic provision of secondary instruction such as France, Denmark, and Holland provide for the country population.

It is to be feared that the development hitherto has not been toward the farm but toward the professions. The evidence is ample to show that in New England generally these colleges devote relatively more attention to the mechanical than to the agricultural division of their curriculum and that a small proportion of the boys go back to the farm. A similar state of things has been reported to exist in New Jersey. In Ohio the agricultural college developed into a State university and the classics overshadowed the agricultural department. In Vermont the winter dairying schools of six weeks have proved most successful and indicated the direction in which the State institutions could be helpful to the farmers. Minnesota and Nebraska have both established high-school grades of instruction of very serviceable character in their relation to the farmer. These efforts at greater adaptation of the colleges to the needs of the farmers has gone far to bridge the gap between the two.

The agricultural colleges must not be considered as having spent the first thirty years of their life in vain. The first great want of farming since the civil war has been the training of a class of scientific investigators. These colleges have done more than all other institutions to supply this great need of scientific leaders in the new agriculture. Secondly, the next important task was the organization of agricultural knowledge in such forms and classifications as would enable teachers to impart it systematically to students.[1] Thus agricultural education has achieved what commercial education is just beginning to realize as its greatest need.

[1] Reports Industrial Commission, Vol. X, pp. 259–264.

SCHOOLS OF AGRICULTURE.

It is of the utmost importance to the country that so high a level of intelligent interest be maintained in the work of farming as to attract youthful talent to rural specialties. There is a demand for managers of truck farms, of stock farms, of orchards, of skimming stations, of creameries, of commercial associations for the sale of farm products, and in many other special pursuits. Expert dairymen are more and more in demand year by year. The agricultural colleges, by their regular and their shorter special courses, are meeting these newer wants with an increasing degree of success. But there is still lacking a type of school which, based on the elementary or primary public school, should recognize the latter as the point of departure for a practical agricultural training of a lower grade than the college. The universities of Minnesota and Nebraska have schools of agriculture of a high-school grade, conforming somewhat in grade at least to the "practical schools" in the French system of agricultural instruction. But it is not claimed of these schools that they embody the element of apprenticeship in the training of the youth to farm duties. Such schools should not feel the overshadowing preponderance of being located at the State university, but in different localities, somewhat after the manner of the "farm schools" of France. These farm schools have not been tried here, if we except a few private experiments. The French institution has sought to train the sons of the peasant laboring class in the practical details of farm work. This includes the use of machinery and tools, care and management of animals, the seeding, the cultivation, and the harvesting of crops, besides theoretical instruction in bookkeeping, French, arithmetic, surveying, leveling, and the general principles of agriculture, horticulture, and arboriculture.[1]

To bridge the institutional gap between the public schools and the agricultural college there is nothing in the American system of agricultural education corresponding in completeness to that in operation in France. There agricultural education begins in the rural primary schools, from the age of 7 to 9, with the simplest facts of agriculture, such as first lessons in the garden; from 9 to 11 years, soils, fertilizers, tillage, and the ordinary implements; from 11 to 13 years, more methodical instruction, in tillage, drainage, implements, fertilizers, sowing, harvesting, domestic animals, horticultural propagation, tree culture, and grafting. After 13, advanced courses for boys and girls include practical ideas and operations in the leading phases of agriculture. The rural primary schools have about 3,400 gardens attached to them. There are 160 of the superior primary schools, with more than 15,000 pupils receiving instruction in agriculture. The purpose

[1] Yearbook of the Department of Agriculture, 1900, p. 124.

is to train the child in observation, in experiment, and in proving the fundamental scientific ideas in agricultural operations, giving that degree of elementary knowledge which will enable the child to read a modern agricultural book with intelligence or attend an agricultural meeting with profit. To supply teachers a course of agriculture was established in the normal schools.

AGRICULTURAL EDUCATION FOR ADULTS.

FARMERS' INSTITUTES.

One of the oldest convictions in the rural mind since the growth of modern cities has been that of the superior educational advantages which cities enjoy compared with the country. The recognition of this fact prompted rural interests to apply their remedies. Individual families, looking to the future welfare of their children, left the farm for the city, or the younger members detached themselves from the farm, while the older members remained for their natural term of life. This flow of population left in many districts the less adaptable elements, giving to the city the strength and vitality of farm life. No system of industry could long expect to attract capital or labor of an efficient character which played this losing game in the process of national development. The beginnings of the awakening on the part of the farmers themselves came with the organization of such self-helping societies as the granges. From the standpoint of public policy the interest of the State in strengthening agricultural communities took the form of colleges and agricultural departments of government. From these two opposite standpoints there have been developed systematic methods of meeting and solving the difficulties of rural progress. Of these agencies the most popular thus far developed is the farmers' institute.

The farmers' institute represents the cooperation of the practical farmer and the scientific worker under governmental auspices in the solution of the problems of farming.

Nearly every State holds from 5 to 300 meetings of this character a year. Each of 42 States has a special official in charge of institutes. They usually have from one to three sessions a day, and continue from one to three days. The general supervision is under the State board of agriculture, or under the direction of the agricultural college, or some central organization acts in cooperation with local societies. The programmes are not simply agricultural in a narrow sense, but cover all leading phases of rural interests. In Pennsylvania, for example, in a two days' session of four meetings, one session may be devoted to domestic science, or home improvement; another to various aspects of practical farming; another to methods of marketing crops,

and another to stock raising or fruit growing. This illustrates the variety and scope of the questions discussed. The purpose is to draw out local experience as much as possible, and at the same time to bring the scientific lecturer or the practical experience of other parts of the State and country to bear upon the farming problems of the neighborhood in which the institute is held.

Pennsylvania has a staff of ninety-five institute lecturers. The reports show an actual attendance of 150,000 people. The general direction and local management of these institutes are outlined beforehand. Institutes of one or two days of five sessions each are held at from one to six different places in each county, $12.50 from the State treasury being allowed for each day's local expenses. Two or three lecturers attend each institute, and local assistance is also utilized to present results of farming experience in that locality. Institutes were held at two hundred different places in 1900–1901.

DEPARTMENTS OF AGRICULTURE.

Nearly all of the States have departments of agriculture in their administrative organization, whose constitutional object is the promotion of this particular interest. Yet in too many cases the amount of money appropriated annually is so small as to limit seriously the usefulness of this branch of the State government.

Examination of the different State reports from departments of agriculture shows that each State has had its peculiar problems to work out, and that it has not been practicable to make the result of one State's experience of much value for the other States. This in part, no doubt, accounts for the fact that no such concert of action has ever been agreed upon by the representatives of the State boards of agriculture, such as has for some time marked the policy of the State labor bureaus or the State railroad commissions. A greater degree of cooperation and more frequent comparison of policies, methods, and results would no doubt improve their efficiency.

Fifteen States have commissioners of agriculture, 24 have boards of agriculture, whose chief duties devolve upon the secretary, and one has a secretary of agriculture. Most of these make annual or biennial reports, intended for general distribution, though the editions are usually quite limited. The main purpose of these departments is to diffuse intelligence on the subject of agriculture.

The Federal Department of Agriculture has very generally devoted itself to research and the spread of information, thus combining the scientific and the popular requirements of improvement. On its scientific side the Department is in close touch with the State experiment stations and thus with the progress of agriculture throughout the whole country. The entire country thus feels the influence of

its enlarging activity. During the three years 1899, 1900, and 1901 the average appropriations for the work of this Department slightly exceeded $2,000,000.

The act of Congress approved February 9, 1889, created an executive department out of what had theretofore been only a bureau in charge of agricultural interests. The Secretary of Agriculture is charged with the supervision of all public business relating to the agricultural industry, including advisory supervision of agricultural experiment stations deriving support from the Federal Treasury, and control of quarantine regulations relating to the cattle trade.

From the beginning a progressive policy has marked the activities of this Department, especially within the last few years. It may be truly said to lead agricultural practice rather than to have followed it. Its services have not only contributed to the wiser direction of agricultural effort in the selection of soils and of plants, but equally so in the prevention of losses, in the opening of markets, and in the diffusion of the latest and best information on important phases of this industry.

VOLUNTARY ORGANIZATIONS OF FARMERS.

Usually voluntary organizations of farmers are looked upon with undoubted favor. In most prosperous States they have flourished in great variety. In the State of Massachusetts these associations are represented on the State board of agriculture. This plan of coordinating local representatives with State agencies for the promotion of agriculture is one of the most encouraging developments in rural society. The State board cooperates with these societies, for example, in supplying them with lecturers and in other ways to promote the interests of the localities represented. There are in Massachusetts 34 agricultural societies, all of which are connected with the State board of agriculture, 16 horticultural societies, 47 farmers' and mechanics' associations, 15 pomona granges, 159 subordinate granges, and 18 organizations of a miscellaneous nature. It is the opinion of the secretary of the State board that improvement in agriculture in Massachusetts has very largely come through these organizations. Their institute lecturers who come into contact with the farmers through these associations are college professors and practical agriculturists.

This is one side of the question. On the other hand it is maintained by some that these associations have encouraged a spirit of discontent in the communities where they flourish, that they almost invariably become mixed up with political issues, and that they impair the capacity and disposition of farmers to stand on their own feet and develop their own individuality.

This latter view of the matter applies more properly to those portions of the country in which farming has not developed the variety

of interests which enables the representatives of diversified crops to understand one another. Where a comprehensive sense of the problems of the farm, both commercial and industrial, guides the policy of such organizations as the Southern California Fruit Exchange, the individual membership does not suffer, but the cooperative capacity receives a much-needed development. The history of farmers' organzations, it is true, shows a constant tendency to exceed their normal functions. The decision to antagonize frequently gets the better of the desire to cooperate with the State authorities in the promotion of the interests of agriculture. Nevertheless, the field of association is constantly widening, and the usefulness of these agencies is being more and more fully demonstrated throughout the country.

Compared with foreign countries the voluntary organizations among American farmers do not have the close relation with the governmental departments one finds in such countries, as in Belgium and in France.

VII. PRICES OF AGRICULTURAL PRODUCTS.

With rare exceptions, prevailing prices of farm products for five years or more have been regarded as favorable to producers, even among farmers themselves. At no time, in recent years at any rate, have the cultivators of the soil been in so good a position to hold both their live stock and crops for improvement in prices. The slow arrivals of wheat and cotton at the beginning of the current season indicate that farmers themselves are more nearly masters of the situation than they have been for some years past.

In spite of this condition there remains the fact that this higher level of prices is but a few years removed from a period of agricultural depression, caused chiefly by uncertainty in the governmental policy on the subject of currency. That uncertainty suspended investment and locked up circulation, thereby curtailing the consuming capacity of large numbers of the population, without correspondingly restricting production.

These two considerations point to two influences that govern farm prices, namely, the general state of domestic prosperity and the sound condition of the financial system. In the West and the South alike the progress of newer industries has affected the prices of farm products advantageously to the producer, and in the older States the still further growth of long-established industries has reacted upon agriculture so far as it may depend upon a home market.

When prices of farm products, such as cereals and cotton, are considered in their relation to the foreign demand for the country's surplus portion, another factor in the determination of prices appears.

Grain prices particularly are affected by competition with the surplus of Argentina, Russia, and Austria-Hungary. India and Australia are so irregular in their surplus as to add further uncertainty to prices at which American grain will sell in Europe.

Fully two-thirds of our wheat and nine-tenths of our corn are consumed at home. The home market is presumably an important factor in governing these prices. In the case of cotton, two-thirds goes abroad and only one-third is consumed at home; hence the foreign market has the larger measure of influence on the price of cotton.

HOW PRICES ARE GOVERNED.

On the whole the home market is the one prime factor which regulates the values of farm products to producers, especially where the policy prevails of reserving the home market to industries on which agriculture is dependent for a near-by demand. Competition among producers and low distributive expenses must be relied on to guard the consumers' interests. Indeed, the factors most generally spoken of as governing prices of farm products, in the testimony of witnesses, are competition and railroad charges. The former affect producers directly, and the latter affects consumers directly. Competition of the West with the East in the markets for grain, hay, and dairy products is constantly referred to as having reduced prices and thus profoundly modified the system of farming throughout the Southern, the Middle, and the New England States. Railroad charges have been constantly referred to, in evidence relating to these sections, as a factor which affects prices unfavorably to the producer but favorably for the consumers. High local freight rates and relatively low rates on long hauls have everywhere restricted the development of local industries. This has tended to favor the distant consumer.

Among the factors mentioned, first rank must be given to the economy of distribution by transportation and commercial exchange from producer to consumer. The reduction in the cost of transportation and the increase in production have undoubtedly caused agricultural prices to fall. The consumer necessarily profits by such improved methods of handling products as are peculiar to the railroads of the United States, and through such agencies as large grain-carrying ships traversing the ocean between the producing territories of the United States and the consuming centers of Europe. These facts suggest one of the leading causes for the general low prices of cereals in the United States during the last thirty years.

A second factor causing a lower level of prices peculiar to the last third of the past century is to be found in the low cost of production, resulting from cheap land and improved machinery for producing

cereals on a large scale. This second group of factors has brought down the cost of production to such a point as to ruin English wheat growing in many localities, and would have done the same thing for Germany and France had not protective measures been enacted to prevent it. These are some of the main influences which have governed the course of agricultural prices for at least three decades preceding the present time. A review of the evidence contained in the Industrial Commission's Report on the Distribution of Farm Products[1] leaves no other conclusion to be drawn.

A third factor is speculation. Much of the testimony on this subject is conflicting. It is certain that speculation in future prices does have a more or less intimate connection with actual values of farm products, but no evidence has been conclusive enough to show whether variations of actual values have been caused by speculative variations, or whether speculative changes have been the result of changes in actual market values. Of farm products it is probably correct to say that speculation does not govern prices except so far as the speculative prices enable the buyer or seller of actual goods to anticipate the probable course of prices at a future time. If this be a fair statement of the weight of evidence, then the speculative market must be looked upon as a buyer's barometer, which more or less faithfully reflects the estimate of the market. It has not been denied that the producer constantly avails himself of this indicator of values in determining whether to withhold or dispose of his crop.

The Kansas City Star has been quoted as stating that farmers in that portion of the Southwest "are buying 'futures' against the wheat they are selling. They speculate in this manner to save building granaries and rehandling the wheat." No information has been obtainable as to the extent to which this practice prevails.

Scarcity of one of two interchangeable crops is a price factor of importance. The price of one cereal is frequently influenced by another, sometimes by substitution of the lower priced for the higher priced grain, as was the case with rye when wheat became too expensive in Europe during the Leiter deal of 1898. Statistics compiled by the Department of Agriculture, covering the period for 1887 to 1899, inclusive, show that the highest average export price of wheat coincided with the largest crop but one, and the smaller crops have been accompanied by low prices.[2] Evidently the export price of wheat raised in the Northern States is not wholly dependent on the size of our surplus. Nor is the connection between large yields in the world's wheat crops and low prices on the one hand, and small yield and high prices on the other, so close and continuous as might be supposed. It is rather the size of the European wheat crop that affects the export

[1] Reports Industrial Commission, Vol. VI.

[2] Edward T. Peters, "Influence of Rye on the Price of Wheat," Yearbook of the Department of Agriculture, 1900, p. 168.

price of the surplus wheat countries. But even this is subject to important modification, owing to the readiness with which rye and other food crops can be made to supplement the deficiency in the wheat yield. In illustration of the same law of substitution, as influencing prices, the present scarcity price of corn in the Northwest is being kept down by the use of wheat for fattening stock for market.

Some of the governing elements in prices of cotton are summarized herewith, from testimony taken before the Commission. It is denied that overproduction is the cause of low prices of cotton. Nevertheless, the fact of too exclusive attention to the production of cotton is generally conceded. It appears that for the last three years, including 1900, production has been profitable and acreage has increased. Most of these crops were made on the basis of the low cost of labor ruling prior to this period. Consequently the outcome was profitable, and underproduction was not considered as a cause of improved prices. Mr. Hammond considers the system of liens as responsible for the excessive acreage devoted to cotton raising. Mr. Graham, of North Carolina, states that 10 acres of cotton are a better basis of credit than 50 acres of corn, and that a mortgage is seldom taken on other than a cotton crop.

In the vicinity of Memphis the favorable price of recent crops has reduced the amount of advances made to farmers and shortened the period of advances. The higher price of cotton in the spring of 1900 was attributed to a short crop. Another cause of improvement in cotton culture is the increased value of cotton seed. Undisputed evidence is furnished to show that the growth of cotton mills in the South has likewise contributed materially to the improved price of cotton. At Augusta, it is stated, the producer gets three-fourths of a cent more per pound than is paid at the seaboard for export cotton. At New Orleans and other Louisiana towns new factories have been organized on what is known as the New Orleans plan. This enables local capital to enter the industry by providing for weekly payments of a dollar each for a small number of shares worth $100. The effect of the location of factories in the cotton-growing section is also indirectly advantageous, not only by promoting savings for investment, but by drawing labor from the fields to the factories, thereby furnishing a local market for small produce, as butter, eggs, and vegetables for the near-by farmers. Such conditions require the local and the foreign mill to compete for the same cotton. Not only cotton production, but the community in general, is thereby lifted to a higher plane of prosperity. Towns generally grow up around new mills.

EFFECT OF CHANGING PRICES.

The declining price of cotton and the rise in the prices of corn and provisions throughout the South must ultimately bring affairs to the point at which it will be more profitable to raise supplies than to grow

cotton, at least as extensively as has been the case in the past. Whenever the purchasing power of corn and provisions proves to be perceptibly greater than cotton it will be seen that Southern farming will turn itself to supplying these high-priced necessities for the local market. The debt-paying power of corn and provisions will then be greater than that of cotton. There are, of course, conditions which will make such a transformation somewhat tardier than would be the case in other portions of the country outside of the cotton belt. For example, advances to the tenant farmer can be obtained much more readily and liberally on cotton than on corn and provisions. On this account the Southern farmer is less free to adapt himself to changes which might materially better his position.

The producer of farm products is generally an advocate of high prices, the effect of which is to increase a supply so far in excess of the demand as to result sooner or later in depressing prices.

The effect of high prices frequently is to concentrate rural labor and capital upon a single line of production, and thus prevent diversification in crops.

Nothing illustrates more clearly the influence of farm prices on the general prosperity than the course of cotton prices during the last three years or seasons ending September 1. The secretary of the New Orleans Cotton Exchange states that the average of the United States crop, based on a middling grade for the crop year ending with August 31, 1901, was 9.33 cents per pound, compared with 7.65 for the preceding year, and 4.88 for the crop year 1898–99. The average commercial value of the crop of 1900–1901 was $47.63 per bale, as against $38.55 and $25.08 for the two preceding years respectively. The aggregate value of the crop of 1900–1901 was $130,782,729 more than that of 1899–1900 and $211,794,562 more than that of 1898–99. The following table based on average middling values gives the amount of income to the South from the cotton crop for the last seven years:

Commercial value of cotton crop.

Year.	Amount.	Value.
	Bales.	
1894–1895	9,901,251	$297,037,530
1895–1896	7,157,846	294,096,346
1896–1897	8,757,964	321,924,334
1897–1898	11,199,994	320,552,000
1898–1899	11,274,840	282,772,967
1899–1900	9,436,416	363,784,830
1900–1901	10,383,422	494,567,549

Four particular causes have conspired to effect this increase in the value of this year's crop compared with that of 1898–99 or that of 1899–1900. In the first place, the crop year of 1900–1901 began with a depleted supply. This scarcity was intensified by a shortage in the crop of 1899–1900, amounting to from 1,750,000 to 2,000,000 bales less than the crops of the two preceding years.

In addition to this shrinkage in supply, the building of cotton mills in the South, some increase in the spindles in the North and West, and the growth of the demand on the part of Europe and the East for cotton, all contributed to emphasize the demand on the diminished supply. From the side, therefore, of the growing demand of the cotton industry on the crop, we have a second cause for the great rise of prices of the raw material. A third cause is to be found in the increasing demand for cotton goods, caused by the general improvement in the state of industry and trade throughout the world. The South has sent more goods than ever to China and the East generally, until the outbreak of the Boxer war. In the home market, the broadening basis of domestic trade, west of the Mississippi especially, and extending into Alaska, gave an impetus to consumption which the country had never before experienced.

Finally, the effect of the low prices of American cotton in 1898–99 had driven out of the productive field many other localities which had begun to supply certain consumers of the raw material in different parts of the world. These low prices simply eliminated numerous such producers and again threw upon the United States practically the whole burden of supplying most of the world with raw cotton. The concentration of the world's demand once more upon the Southern States resulted in the remarkable phenomenon of the high price of cotton for the crop year 1900–1901.

The relation of the level of farm prices to the demand for land is intimate. High prices have a decided effect in the wider distribution of farm population. Older lands are sold out at advanced values and remoter ones taken up to greater advantage. Conversely, a decline in land values is only another form of decline in the price of farm products. Where occupancy is more settled there is no escape from the depressing influence of low prices, except the anticipation of such a tendency and the variation in the crops which will enable the producer to meet the low-price periods of production. This in reality is the only remedy for depression, from the standpoint of the producer. By restriction of supply in one direction and the development of effort in other neglected phases of farming, the tenor of the market is improved in all directions.

Two conditions favoring the recovery of agriculture in the East are the low price of land and the lower rate of interest. One witness stated that with enough capital to pay half the cost of land in New Jersey he could easily provide for the other half out of the profits of the land. Furthermore, since the decline of fertility began in the East, about forty years ago, the progress of agricultural chemistry has aided in systematic restoration. Likewise methods of restoring fertility by means of leguminous crops have received wide application, not only in the East, but in every section of the country where the recovery of lost fertility has been made necessary.

It is found that the acreage responds quickly to advance in prices. Successful experiment is promptly appropriated. An excellent illustration of how the rise in prices extends production is found in the case of broom corn. The price of this product during the year 1900 was from two or three times what it had been before, owing to the formation of a combination of manufacturers to control the new material in the central West. In 1901, consequently, the acreage of broom corn in Illinois alone increased from 61,000 to 80,000 acres, or 19,000 acres in one year.

VARIATION IN PRICES.

The course of agricultural prices has varied greatly from the middle of the past century down to its close. From 1849 to 1872 the general course was upward. From 1872 to 1894 the general course was still more rapidly downward. Since 1894 there has been a marked recovery not only throughout the United States, but throughout the greater portion of the world, so that the level of prices has reacted very favorably upon the progress of production of farm products.

The following table gives, in the first column, the crop year, in the second the country's production of corn in bushels, in the third the farm price as reported in December of the year named, in the fourth and fifth similar particulars for wheat, and in the sixth and seventh the cotton crop, as estimated by the Department of Agriculture, and the yearly average prices of low middling uplands in the New York markets. An asterisk (*) affixed to the price denotes a change in the same direction as in the production, the change in other cases being opposite:

Production and prices of three agricultural staples since 1883.

[From the Crop Reporter.]

Crop year.	Indian corn.		Wheat.		Cotton.	
	Produced in United States.	Price per bushel.	Produced in United States.	Price per bushel.	Produced in United States.	Average price per pound in New York.
	Bushels.	*Cents.*	*Bushels.*	*Cents.*	*Bales.*	*Cents.*
1883	1,551,000,000	42.4	421,000,000	91.1	5,701,000	10⅛
1884	1,796,000,000	35.7	513,000,000	64.5	*5,682,000	10¼
1885	1,936,000,000	32.8	357,000,000	77.1	6,575,000	9
1886	1,665,000,000	36.6	457,000,000	68.7	6,254,000	9⅛
1887	1,456,000,000	44.4	456,000,000	*68.1	*7,020,000	9⅞
1888	1,988,000,000	34.1	416,000,000	92.6	6,941,000	10
1889	2,113,000,000	28.3	491,000,000	69.8	*7,473,000	10⅛
1890	1,490,000,000	50.6	399,000,000	83.8	5,653,000	8⅜
1891	2,060,000,000	40.6	612,000,000	*83.9	9,035,000	7⅞
1892	1,628,000,000	*39.4	516,000,000	*62.4	6,700,000	8
1893	1,619,000,000	*36.5	396,000,000	*53.8	7,498,000	7⅛
1894	1,213,000,000	45.7	460,000,000	49.1	9,476,000	6
1895	2,151,000,000	25.3	467,000,000	*50.9	7,161,000	7⅛
1896	2,284,000,000	21.5	428,000,000	72.6	8,533,000	7⅛
1897	1,903,000,000	26.3	530,000,000	*80.8	10,898,000	5⅞
1898	1,924,000,000	*28.7	675,000,000	58.2	11,189,000	5⅛
1899	2,078,000,000	*30.3	547,000,000	58.4	9,148,000	7⅜
1900	2,105,000,000	*35.7	522,000,000	62	[1]10,338,422	[2]9

[1] New Orleans Cotton Exchange figures.
[2] Latham and Alexander Company's Cotton Movement and Fluctuations, 1901, p. 102.

The effects of variation in prices upon movements of capital and labor are slow but certain. Whenever one farm product of first rank rises higher than others, so as to put it on an unusual level of value, the effect is to attract labor and capital in that direction for the time being, to the sacrifice of other phases of farming. This process goes on slowly, but, in the long run, surely. The high prices of meat and corn have given an unusual prominence to the growing of corn and live stock throughout the Central States, and made of that cereal a still more fundamental crop. It has also somewhat reduced the primacy of wheat growing. This applies especially to what is known as the corn-belt territory of the United States.

Throughout the spring-wheat belt the high price of butter and the low price of wheat which prevailed about 1890 led to the development of dairying throughout Minnesota and Wisconsin, as well as to the growth of such crops as potatoes, fruits, and the like, so that these localities have become highly specialized, primarily from the fact that change of prices gave very different direction to the whole system of farming.

Variation in prices of farm products changes the purchasing power of the whole farming population whose crops are affected thereby. As pointed out elsewhere, the cotton crop of 1900–1901 increased the income of the South by $131,000,000 over the amount received for the crop of 1899–1900. A rural section in such a position exerts an influence upon the prosperity of the country in every phase of labor and investment outside of its own. The country as a whole has an important interest in the maintenance of a fairly high level of agricultural prices.

Another effect of variation in prices is seen in the shifting of the location of a particular agricultural industry from the less favored to the more favored districts. The influence of the fall of prices of cotton resulted in such relocation of cotton-growing territory in two different areas: (1) It drove the cotton growing out of the hill country into the lowlands along rivers and streams east of the Mississippi; (2) a still greater change was the shifting of the cotton-growing area toward the Southwest, until one-third of the whole cotton crop came from Texas alone. The actual seat of cotton production was forced in the direction of the new and unexhausted lands as a result of the necessity of producing at a lower cost. In 1896–97 Texas raised less than one-fourth of the total cotton crop, the other three-fourths having been produced in the other Gulf and the Atlantic States. In 1900–1901 the crop of Texas was larger than that of either of the other sections, being 3,809,000 bales, or 37.6 per cent, for Texas alone, including Indian Territory, 2,781,000 bales for the other Gulf States, and 3,793,000 bales for the Atlantic States, including Georgia, Alabama, and Kentucky, out of a total crop of 10,383,000 bales.

It is a quite general principle in the variation of prices that the change in the price is greater than the change in the supply—that is, a reduction of supply of 5 per cent may cause a rise of, say, 10 per cent in price, and, vice versa, an increase in supply of 5 per cent results in a decrease of, say, 10 per cent in price.

The causes for variation in the prices of cereals in the United States must be sought in the world's supply of breadstuffs from year to year, in its relation to the demand. In this connection the European crop is the principal factor. A shortage there sends up the world price; an abundance depresses it with greater certainty than is the case with any other factor in the world's cereal situation. The demands of the deficit wheat countries are consequently the chief influence in fixing the price at which the American surplus shall be disposed of. That demand varies with the European harvests—that is, according to the size of the deficit.

The size of the surplus influences both the domestic and the export prices.

The necessity of the United States to dispose of its surplus in the European markets without any other outlet has led wheat growers of the Northwest to advocate, with much unanimity, the importance of finding a larger market in the Orient, so that there may be competition with Europe in the demand for our surplus.

AGRICULTURAL DEPRESSIONS.

It has not been denied that both cotton and grain farming have at different times since 1870 been carried on at a loss; that is, the price received by the farmer was, for many parts of the country and for successive years, below the cost of production. In the South planters have sold cotton for between 4 and 5 cents which cost 6 or 7 to produce. Wheat in the Northwest which cost 50 cents to produce has had to be sold at a price below cost. These conditions have also prevailed over large areas and during successive years since 1890, but more as exceptions than as a general rule. Witnesses attribute decline in agricultural prosperity to overproduction in some directions and the lack of adequate facilities in cities to handle quickly perishable products. To these they add adulteration as a depressing factor, especially in the case of butter, cheese, bran, flour, meal, and groceries. These are specific causes, while cheap Western lands, farm machinery, low freight rates by land and sea, and Western competition with the East are general causes for decline of farm prices.

EFFECTS.

The question of agricultural depressions has been viewed from a general and a local standpoint. There is no doubt that land values in

New England, New York, and Pennsylvania, as well as in many portions of the South, have declined steadily in the last quarter of a century. Much of the hill country in New England would, however, never have been settled for agriculture if the Western lands had been accessible at that time. When the Western lands were opened the poorer soils of the East dropped out of cultivation.

At the present time there is no serious depression in the prices of agricultural products, with the possible exception of wool and a few other commodities influenced by unusual conditions. It is stated that there has never been a more favorable time to buy a farm and pay for it out of its products than at the present.

One cause for the slow recovery in the price of wool in 1897 and 1898 was the enormous quantity which was brought into the country prior to the reimposition of a tariff on imported wool by the act of 1897. In addition to this there has been a very rapid increase of flocks in some localities, and the quality of wool has been of a medium rather than a superior grade. Attention has been called to the policy of sheep husbandry in the United States in paying more attention to the demand for mutton than to the demand for wool, because the former is the more profitable of the two.[1] In accounting for the depressed state of domestic wool prices, Mr. Theodore Justice mentions two other causes, namely, the sympathetic influence of the fall in prices of merino wool in London in 1900 upon American prices; and, secondly, the very general substitution of cotton for wool.[2]

One of the first effects of the fall in prices of staple farm products has been the effort to find what other products were in demand in the consuming markets. Frequently it has occured that the farmers, instead of raising crops which had to be shipped a great distance, have found that it was possible to sell nearer home by giving attention to the demands of local communities. This has resulted in diversification of crops and a better understanding of the relation of the market to the farm.

Agricultural depressions always reach far beyond the farming interests in their consequences. Their effect on railway revenues is one of the most noteworthy phenomena of commerce and finance. Corn and wheat are still the mainstays of the majority of the railroads of this country. But they are now less vitally important than in 1880, or 1894 even. In the latter year the failure of the corn crop had a disastrous effect on railroad revenues. Other causes were added, but the loss of corn yield in Nebraska and Kansas was the primary influence and the main one. If the harvest then had been a bountiful one the whole financial and economic history of the United States in recent years would have been different. It is true that in the years when

[1] Reports Industrial Commission, Vol. VI, p. 328.

[2] Reports Industrial Commission, Vol. XIV, pp. 370–397.

the financial depression was at its height the corn yield was larger, but this happened when the purchasing power of the general community was at its lowest point and Europe was not in the market.

With the growth of the towns and of general trade activity west of the Mississippi River, says a financial review, the railroads conducting the transportation of that section are less dependent on the harvest yield than ten years ago; but corn and wheat still continue to furnish their chief traffic, and probably about 50 per cent of their tonnage is affected directly or indirectly by a crop failure. What a general crop failure may mean may be gathered from a few figures, showing the changes in revenues of the affected railroads at the time of the last corn-crop failure. This was in 1894, when the corn harvest yielded but 1,213,000,000 bushels, valued on the farm at $555,000,000; whereas in 1891 the crop was 2,060,000,000 bushels, valued at $836,400,000. How the purchasing power of the West was crippled and the spirit of discontent spread abroad may be realized by comparing the harvest in the principal corn-growing States in 1894 and earlier years. This is done in the appended table:

Production of corn in the principal corn-growing States, 1891–1894.

States.	1894.	1893.	1892.	1891.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*
Iowa	81,344,010	251,832,150	200,221,000	350,878,000
Nebraska	13,856,524	157,278,896	157,145,000	167,652,000
Kansas	41,797,728	139,456,702	145,825,000	141,893,000
Missouri	116,011,654	158,197,715	152,489,000	203,210,000

In 1894, also, the disaster to corn was further emphasized by only a moderate production of wheat, oats, and other grains. With 125,000,000 bushels of Nebraska corn and 100,000,000 bushels of Kansas corn lost in one year, it is not necessary to go far to explain the industrial conditions which followed. Some of the losses reported in railway earnings will further emphasize the effect of a complete corn failure. The largest losses in that year of railway disaster were shown by the corn roads, and how these fared will be seen by the following list of decreases for the calendar year 1894 in gross and net receipts:

Decrease in receipts of certain railroads, 1894.

Railroads.	Decrease.	
	Gross.	Net.
Atchison	$7,965,956	$5,706,743
Burlington and Quincy	6,841,605	1,458,723
St. Paul	5,386,656	1,453,355
Northwestern	4,680,638	2,491,366
Union Pacific	4,607,006	3,477,057
Illinois Central	3,695,638	2,311,809
Southern Pacific	3,571,791	2,002,710
Chicago and Alton	1,274,634	247,302

Burlington and Quincy, the greatest of corn carriers, had a deficit of over $1,000,000 for the year, after a reduction of dividends. Rock Island's gross receipts dropped from $21,000,000 in the previous year to $17,420,000, and the surplus of $208,000 over 4 per cent dividends was reduced to a deficit of $802,000, after a 3 per cent dividend. Missouri Pacific's gross earnings of $24,000,000 in 1893 were reduced to $21,800,000 in 1894. The Union Pacific, which reported gross earnings of $26,500,000 in 1893, had but $22,300,000 in the following year. These revenue losses were primarily due to the almost complete loss of the corn harvest. The value of this crop to the roads is not so much that they move a large amount of the grain in bulk, as it is due to the fact that the cattle movement depends so largely on the corn yield.

Taking statistics of the freight movement on all the railroads of this country, grain accounted for 59,000,000 tons of freight in 1899, out of a total movement of 831,000,000 tons. This was 7¼ per cent of the total tonnage, but no other commodities, except coal and lumber, furnish so heavy a proportion of the freight carried on the railroads in the United States. The tonnage from cattle varies as the corn yield is good or bad. In 1899 live stock traffic was 15,250,000 tons, dressed meat 4,500,000 tons, and packing-house products were 5,000,000 tons, while other animal products yielded fully 4,000,000 tons to the traffic movement of the railroads. Thus nearly 210,000,000 tons of freight were contributed to the railroads by agricultural and cattle products.

PERMANENT CONDITIONS OF AGRICULTURAL PROSPERITY.

The popular impression prevails among witnesses that the foreign trade fixes prices of our surplus crops, and that the foreign markets determine the value of the crop as a whole. The price in Liverpool, it is alleged, makes the price of cotton for the world. Similarly, it is believed that Liverpool fixes the price of wheat. The dependence on one foreign market thus depresses prices. Another cause is the farmer's necessity for marketing his crops when the greatest volume is thrown on the market, "thus playing into the hands of the speculators." Of this, both cotton and grain producers complain. Consequently there has arisen the demand that the policy of the Government should provide for opening more foreign markets for farm products.

A thorough analysis of agricultural relations in the United States would seem to indicate that the emphasis should be laid on the home market as a price-determining factor, rather than on foreign markets. The reverse, however, is still true of cotton prices, of which crop only about 30 per cent is consumed at home. But the increase in

Southern consumption is having a decided influence in improving the prices of raw cotton to the producer.[1]

Grain prices stand in a somewhat different relation to the two branches of the market demand. The domestic demand requires three-fourths of the supply of wheat and nine-tenths of the average annual market supply of corn. The remaining one-fourth and one-tenth, respectively, are required for the foreign demand. The general level of prices is the result of both demands, foreign and domestic. The level of prices resulting from the influence of the domestic demand on the domestic supply is always subject to being raised or lowered by the foreign demand. In this sense the foreign demand for the American surplus fixes the range of prices for the crop as a whole. Foreign scarcity raises American prices somewhat higher, and foreign abundance depresses prices here by lack of demand.

Agricultural prosperity depends on marketing crops at something more than the general level of expenses of production, in which is to be included the expenses of distribution to the consumer. The margin between expenses and market prices, other things being equal, is greater the nearer to the point of production the product of the farm is consumed. From the standpoint of advantage to the producer the home market is consequently always the primary consideration in agricultural policy. The foreign market is necessarily more irregular and therefore often a disturbing factor in domestic prices, rather than a remedy for agricultural depression.

The risks of the foreign trade are, moreover, greater than those of the domestic trade, consequently the element of speculation is larger. But in the long run these risks tend to be reduced to narrower limits, and the course of prices at home or abroad depends far more upon the conditions of demand and supply than on any speculative factors. Permanent markets are among the first requirements of a sound agricultural policy.

VIII. ADAPTATION OF THE FARM TO ECONOMIC CHANGES.

THE DEMAND FOR MONETARY REFORM.

The agricultural question varies with different periods and different places, but there is always some central problem which forms the core of discontent and discussion in the effort to find a remedy. That problem is usually one of adjustment of farming interests to economic changes. In 1893 the low price of farm products and the causes and remedies were a central subject of discussion and inquiry. The analy-

[1] Reports Industrial Commission, Vol. VI, pp. 171–173.

sis of the conditions then existing were made public, as far as the South was concerned, in the George report to the United States Senate. It found that low prices, for cotton especially, were the principal cause of agricultural distress. It proposed as remedies (1) that the commercial practice of dealing in "futures" of farm products be abolished, and (2) that silver currency be remonetized, as a means of raising the price of cotton.[1]

In 1891, two years before the George report appeared, ex-Senator W. A. Peffer, of Kansas, representing conditions in the West, wrote extensively on the agricultural question. His main contention was that agriculture, compared with railroading, banking, and manufacturing, had been for some years losing ground relatively to these other great interests and to the progress of the country as a whole. "So it is all over the country and all over the world. Agriculture is behind, farming is profitless, farmers are not doing business on a cash basis. The railroad builder, the banker, miner, and manufacturer are growing richer, while the farmer and his coworker are poorer as the years pass." This is the estimate of this eminently capable and representative publicist speaking of the agricultural situation just ten years ago. The remedy he proposed was likewise monetary. "The plan we propose is that the Government prepare money—good money—and lend it to the people on just such security as individual money lenders now take, and which the Government enforces. We want money direct from the Government, offering the same security that the Government offers for its debts—the prosperity of the people. And we want money, not certificates to sell to speculators for money. * * * Touch any spring along the keyboard of commercial gambling and a Wall street syndicate appears. This dangerous power which money gives is fast undermining the liberties of the people. It now has control of nearly half their homes, and is reaching out its clutching hands for the rest. This is the power we have to deal with. It is the giant evil of the time. Money is the great issue—all others pale into insignificance before this, the father of them."[2]

It must be noted that these two analyses of agricultural conditions presented by the then Senators Peffer and George represented the two leading agricultural sections of the country, the West and the South. They agreed substantially upon remedies, namely, that the rise of prices was the only remedy worth considering as fundamental, and that this must come through monetary reform either by silver coinage or by the subtreasury plan. The money powers (banks and railroads), they alleged, controlled prices (including rates of freight and the markets) by cornering currency, and therefore an increase in the quan-

[1] Senate Report 986, 53d Cong., 3d Sess., vol. 1.

[2] "The Farmers' Side, His Troubles and their Remedy," pp. 20, 123, 270–271.

tity of money, a change in the method of issue, and a better distribution of the money issued were features in the only remedy that would go to the bottom of the disease of monetary strangulation. "Unless relief is afforded to most of the farmers and other producing people whose homes are mortgaged, they will be homeless in a very few years; and it is evident to all who have carefully studied the situation, that relief, if it come at all, must come through a reduction of interest rates to a figure which can be paid, leaving something to pay on the principal."[1]

Neither of these methods of relief was adopted. What was sought to be effected, however, by these remedies really came to pass, namely, an increase in the circulating medium of the country, such as had never occurred during any similar period of our economic history, and a subsequent fall in the rate of interest.

The other remedial factor besides the increase of circulating medium was the rise of farm prices which followed the depression of 1893–94. It may be properly held that the improvement in prices was the effect of the increase in circulating medium; but, on the other hand, it must not be forgotten that the influences which led to the increased demand for money to transact business came very largely from the rural districts upon which gradually growing demands were made for the surplus farm products. It is therefore fair to say that to some extent the improvement in prices was responsible for increase in the per capita circulating medium and that likewise the growth in circulation helped to stimulate the advance in prices. Back of all this it must be kept in mind that the low prices of the depressing period of 1893–94 and the opportunity to acquire lands from railroads in the more distant portions of the West created an increased demand for money, by broadening the bases of commercial operations, not only in relation to agriculture, but equally so in regard to lumbering and mining in these more distant localities.

In the following table the money of the United States in coin and notes, the circulation, both in volume and per capita, and the population, as estimated by the Treasury Department, are given from 1885, which was the first year in our monetary history when the total moneys of the country amounted to $1,500,000,000. The volume of increase from 1885 down to 1900 is apparent from this statement. The per capita circulation, as well as the absolute amount of money in circulation, shows a fairly steady increase, though there was a notable falling off in 1886 and again in 1896, besides lesser diminutions in 1889, 1893, and 1895.

[1] "The Farmers' Side, His Troubles and their Remedy," p. 273.

Statement of the coin and paper circulation of the United States from 1885 to 1900, inclusive, with amount of circulation per capita.

[Report of the Secretary of the Treasury.]

Year.	Coin, including bullion in Treasury.	United States notes and bank notes.	Total money.	Coin, bullion, and paper money in Treasury, as assets.	Circulation.	Population.	Circulation per capita.
1885	$872,175,323	$665,257,727	1,537,433,550	$244,864,985	$1,292,568,615	56,148,000	$23.02
1886	903,027,304	658,380,470	1,561,407,774	308,707,249	1,252,700,525	57,404,000	21.82
1887	1,007,513,301	625,898,804	1,633,412,705	315,873,562	1,317,539,143	58,680,000	22.45
1888	1,092,391,990	599,049,337	1,691,441,027	319,270,157	1,372,170,870	59,974,000	22.88
1889	1,100,612,434	568,059,979	1,668,672,413	278,310,764	1,390,361,649	61,289,000	22.52
1890	1,152,471,538	532,651,791	1,685,123,429	255,872,159	1,429,251,270	62,622,250	22.82
1891	1,112,956,537	564,837,407	1,677,794,044	180,353,337	1,497,440,707	63,947,000	23.42
1892	1,131,142,260	621,076,937	1,752,219,197	150,872,010	1,601,347,187	65,191,000	24.56
1893	1,066,223,357	672,585,115	1,738,808,472	142,107,227	1,596,701,245	66,456,000	24.03
1894	1,098,958,741	706,120,220	1,805,078,961	144,270,258	1,660,808,708	67,740,000	24.52
1895	1,114,899,106	704,460,451	1,819,359,557	217,391,084	1,601,968,473	69,043,000	23.20
1896	1,097,610,190	702,364,343	1,799,975,033	293,540,067	1,506,434,966	70,365,000	21.41
1897	1,213,780,289	692,216,330	1,905,996,619	265,787,100	1,640,209,519	71,704,000	22.87
1898	1,397,785,969	675,788,473	2,073,574,442	235,714,547	1,837,859,895	73,060,000	25.15
1899	1,508,543,738	681,550,167	2,190,093,906	286,022,024	1,904,071,881	74,433,000	25.58
1900	1,607,352,213	732,348,460	2,339,700,673	284,549,675	2,055,150,998	76,295,220	[1]26.94

[1] NOTE.—The population proved by the Twelfth Census to be lower than the figure assumed in the above table, so that the revised per capita circulation would be higher than $26.94 in 1900. Even at this figure of per capita circulation the increase was 18 per cent over that of 1890.

CAUSES OF THE RESTORATION OF PROSPERITY.

The four chief influences in the restoration of agriculture to its present state of prosperity out of its general prostration of several years ago were:

1. Rise in farm prices.
2. Increase in circulating medium and the extension of rural banking agencies and institutions.
3. The more general diffusion of manufacturing industries, such as cotton mills in the South and grain mills and dairying industries in the North and West.
4. The substitution of live-stock production for cereals in the central West as the basis of farming, and the progress of diversified agriculture in various parts of the country.

DIVERSIFICATION OF CROPS AND DEVELOPMENT OF MARKETS.

Great economic changes have occurred outside of farming, including changes in the monetary system, in transportation, and in industries, of more or less favorable effect upon agriculture. The attitude of banks toward agriculture has been changed under the necessity of seeking outlets for surplus capital. The methods of transportation have been improved, both in the time required to reach the market and in the use of such facilities as refrigerator cars. Local industries have given rise to demands which led to diversification. Readier access to large markets has led to specialization, as in the trucking of the South and orcharding in the West.

Specialization of crops in favored localities is now a prominent tendency in farming. Sugar-beet culture is of this class. As an example of the success with which a special crop may be grown and marketed, the cantaloupe business of Rockyford, Colo., may be cited. A total of 398 cars were shipped during the past season ending with September from that station alone. From the vicinity no less than 500 carloads were sent out. Each car contained an average of 400 crates of 45 melons each, making a total of 200,000 crates or 9,000,000 cantaloupes, which were disposed of in markets as far east as New York and Boston. On an average it is stated that growers received $1 per crate for their product. Most of this fruit was shipped by fast freight, 50 carloads by express, and 50 more in small express shipments from Rockyford.

Diversification of crops has gained much in the South within a decade. Its real significance in the reconstruction of the system of farming is more apparent when regarded as a transition between the single crop system and a complete rotation system. In this respect it stands for the efforts of the farmer to reduce the risk of failure incident to dependence on single cropping. This change is going on over large sections of the country both in the South and in the West. In the West dairying and stock raising have called into existence grass and hay crops, which now figure largely in the assets of the later systems of cultivation.

In the East one of the more noteworthy developments of markets has taken the form of a demand for fruits and vegetables for canning.

Here, as elsewhere, the development of new markets has been greatly hindered by the lack of well-established relations of contract between the producers and the manufacturers of raw materials furnished by the farm. In the case of creameries mechanical standards, such as the Babcock test, furnish to the buyer and the seller a common standard by which to determine quickly and accurately, with almost no expense, the value and grade of the commodity sold. Likewise the chemical test to which the sugar beet is put upon receipt at the beet-sugar factory enables the farmer and the manufacturer to know the value of the product on the common basis of estimation. In both cases contracts are entered into beforehand for the quantity required for the season; otherwise it would be impossible to induce capital to invest largely in a manufacturing plant, unless it could be legally certain of being furnished with the required materials. The canning industry, which has made such enormous advances in different parts of the Union, has suffered somewhat from this difficulty. Contracts, made in advance of the season, with due allowance for the risks of short or abundant yields, have resulted in fatal misunderstandings on the part of one party or the other. In seasons of large yield the canning

establishments have refused to take the whole crop of the farmers, and in seasons of short crops the farmers have been induced by the tempting offers of outside parties to send their yield into better markets than the contract provided for. The trouble between the New Jersey packers of tomatoes and the farmers has finally been brought into the courts for determination of the binding character of the agreements. These agreements were not in writing. In the vicinity of Salem, N. J., a great deal of hard feeling has been engendered on this account. Likewise the farmers living near Cambridge, Md., had contracted for the sale of their tomatoes to the factories at $6 per ton. When they advanced to nearly double that amount, speculators appeared and secured a considerable portion of the crop, thus causing the packers to lose heavily and making it impossible for them to fulfill to advantage their contracts with the trade. In one case several lots of tomatoes were replevined by one of the canners and brought to his factory. In 1900, when the crop was abundant, the factory price was so much better than the outside market that growers generally delivered larger supplies than the factories were prepared to handle. These facts regarding the development of canning factories as a local market for such products as tomatoes, corn, peas, beans, etc., throw some light on the difficulties under which industries closely allied to farming are conducted when there is wanting some equitable scale of graduating prices.

The history of the canning industry is of value in showing how farmers have managed to open new avenues of trade. About the year 1840 we hear of the corn-canning industry having been begun by one Isaac Winslow, near Portland, Me. During his visits to France he learned of the process of preserving food (fruit) by canning, and conceived the idea of preserving green vegetables in hermetically sealed cans. In 1842 he planted some corn for experimental purposes and canned it, cob and all. Later the corn was cut from the cob by hand, then gradually machinery was introduced, until now practically everything is done by machinery. The number of acres planted to sweet corn under contract for the supply of the canning factories in Maine, in 1899, was 11,050, and for the corn the farmers were paid $331,500. There were packed in Maine, in 1899, 22,100,000 cans of corn. At the prices quoted this would have been worth $1,519,374.45. The packing season lasts from three to six weeks, and takes about 7,000 men and women inside the factories to keep them going. There were at that time about 70 factories, representing an investment of $500,000 in the State. The quantity of tin plate consumed in making the cans was 6,185,190 pounds.

It has been pointed out that nearly all kinds of vegetables may be canned, including such orchard products as apples, peaches, plums,

apricots, and the like. In Missouri the canning of eggs has been going on for several years for the purpose of supplying the Alaskan and far northern trade.

Reverting again to the canning business in Maine, it is believed that the possibilities are almost unlimited in this direction. The canning of blueberries has alone become a large business in Washington County. Five factories in 1899 packed an aggregate of 39,000 bushels, the farm cost of which was $50,000, and the entire pack when sold at the prices ruling at the time amounted to $104,000. The pickers of these berries alone received $31,000.

One particular feature of this great change in the form in which the farm product is marketed is the readiness with which the canned goods can be marketed at any season of the year. But even more important than this is the advantage which the canning factory has of contracting in advance for the whole output. Large department stores in New York and other cities now give their orders fully six to twelve months in advance of the canning season. The factory proprietors themselves, on the basis of these contracts, proceed to make contracts with the farmers for the cultivation of the crop desired, or with collectors of berries and other small vegetable crops for a supply of whatever is needed. It thus comes to pass that the industry is given a permanency and a continuity which enables the rural population to count upon it from year to year as a means of employment and income. It is further noticeable that these crops, especially the corn crop, have not succeeded in impoverishing the soil in such States as Maine, because much of the manurial value of the plant is in the fodder, which is left for feeding the animals on the farm, thereby enabling the farm to grow more stock than it would if the land were all put in grass. The corn canning industry has therefore introduced increased means of maintaining the fertility of the soil in the older States.[1]

Besides trucking and canning, dairying has done most toward the adjustment of farming to commercial demands. Cheese factories and creameries have afforded new markets for the milk of the farm. At the six cheese factories in the State of North Dakota, an average of less than 10 pounds of milk was required for a pound of cheese. Farmers received 68.3 cents per 100 pounds for milk, or an average of $2.15 per cow per month. It has been stated by the Commissioner of Agriculture that the average total income per cow supplying the cheese factories per year was $35, and the average cost of keeping a cow per year about $22, making a profit of $13 on each cow milked. In a new State such as North Dakota, where profits are high from dairying, it is more profitable to raise calves than to sell them. The by-product of the cheese factory can not be used for the purpose of rais

[1] Report of the Maine Board of Agriculture, 1900, pp. 198, 199.

ing calves, as the milk sent to the creamery can be, after the cream is separated from it; consequently creameries have been much more in favor than cheese factories, owing to the feeding value of the milk derived from the creameries. In one case at least the cheese factory has substituted butter-making machinery. There were in operation in October, 1900, 15 creameries. The milk supply came from 535 patrons. The plan of establishing skim-milk stations located along the line of the various railroads, where the milk can be separated and the cream shipped to a central plant, ripened, and made into butter, seems to be developing as a substitute for the older system of depending on the delivery of the milk unseparated from the cream at the creamery. It is apparent here that the increase in live stock from the raising of calves and young cattle is so profitable that no system of utilization of the milk could prosper without recognizing the necessity of making use of the milk for feeding stock.

These instances of representative development are cited to show that in the newer States of the Northwest stock growing in connection with the farm is already becoming an established feature of agriculture. For the present, however, stock raising would appear to be primarily for commercial purposes and not with a view to maintaining the fertility of the soil. Nevertheless, as land becomes more valuable and each producer must content himself with a smaller quantity, the pressure of events and conditions will force upon him the necessity of improving the quality of the soil. His acquaintance with the rearing of live stock and its preparation for market as well as for dairying purposes will enable the system of farming to make a much shorter cut from the extensive to the intensive method than was made in the prairie regions of the central West. It is doubtful whether any important agricultural section will ever again pursue the wasteful system of exhausting the soil by continuous cropping which still prevails in some of the older States.

The tendency of rural investments throughout the districts in which butter and cheese making has taken root seems to be in favor of putting less of the surplus into land and more into such industrial equipment as will enable the farmer to give increased value to the raw materials of the farm before putting them upon the market.

The production of cheese in Missouri and Kansas within the past few years, with Kansas City as a distributing center for that branch of trade, has been a feature of the agricultural and commercial adaptation, especially in the northern half of Missouri and the eastern portion of Kansas. Two years ago very little Western cheese was handled in the Kansas City market; at the present time there are only one or two firms handling Eastern or Northern cheese, and that in comparatively small and steadily decreasing quantities. There have been a great many new factories established within the past year or so, but

the greater portion of the increase in output has come from the enlargement of older factories. The ruling price in this market averages about 1 cent less than the quotations on Eastern and Northern cheese.[1]

It has frequently been assumed that creameries are establishments involving small outlays of capital, and that they may readily be set up in almost any community with a fair prospect of success. This has not, however, been the case in all parts of the country where the butter and cheese industry has gained a footing. There have been many failures, especially in small cooperative establishments. Nevertheless, the conditions of success even under cooperation are pretty well defined and easily learned by this time. One of these conditions, regardless of whether the creamery is a cooperative or an individual enterprise, is the use of an ample supply of capital to provide the best machinery, trained management, and operation on a large scale. The creameries of Kansas may be taken as typical. Twenty-four creameries reporting to the bureau of labor of that State in 1897 had a capital of $259,442 invested, being an average of $10,810 per creamery.

The dependence of these establishments on markets is illustrated by the fact that 20 creameries reporting at that time sold only 8.4 per cent of their product within the State of Kansas; 70.9 per cent was shipped to other States and sold there, and 15.2 per cent was exported, leaving 5.5 per cent to be accounted for. Special inquiry has shown that the use of the refrigerator cars has enabled the Western producer to put his butter and cheese into almost any market within the country without deterioration in quality. Within the last three or four years two at least of the large packing-house companies have gone into the business of collecting and distributing butter, thus putting at the service of producers, large and small, throughout these States a much larger number of refrigerator cars than formerly. Under these new conditions production would seem to be materially advantaged.

INSURANCE, BANKS, AND COOPERATIVE BUYING.

Excessive rates for insurance on rural property drove farmers into independent organizations for the purpose of insurance against fire losses first, and later to other forms of insurance. In every essential respect this departure has justified the treatment of rural conditions as a separate field for the application of the principles of the distribution of losses. Rates of insurance have been greatly lowered, and special forms of insurance have been provided for, which under the old standard policies were not to be had.

The credit banks of Europe have not seemed adaptable to the conditions of farming in the United States. Branch banks, State banks,

[1] Missouri Agricultural Report, 1901.

private banks, and national banks, under the act of 1900 providing for smaller capitalization ($25,000), have all, to some extent, participated in the remarkable growth of banks and banking capital in rural sections of the country since 1893.

Cooperative buying has succeeded within limits. The old idea that a cooperative store in a farming community, under the management of one not specially accustomed to the selection of goods for the local market, could succeed because of the assured patronage of the promoters, has long since proved itself impracticable. The rock on which these stores were wrecked was lack of cash. Generally where farmers have confined themselves to a quite limited variety of goods needed by them, such as standard grades of fertilizers, farm machinery, and implements, and groceries which can be handled in large quantities, cooperation has justified itself, but as a rule on a cash basis only. In such goods the risks of maintaining a stock and of handling are small, the time between their purchase and their distribution to the so-called consumer is short, and the advantage of buying in large quantities for cash can be realized without any great advances on the part of any particular person. As a result of these conditions, coupled with cash payments by consumers, cooperative buying within the lines specified has frequently been carried on in many different forms with a highly creditable degree of success.

Another obstacle in cooperative buying has been the absence of a credit rating on the part of cooperative organizations, in cases where they were not in a position to buy for cash.

IX. AGRICULTURAL METHODS.

The progress of American farming from its beginnings in colonial days to the present era of invention and rural comfort is one of the most instructive phases of our national evolution. Early colonial methods were crude. "Agriculture, as we know it," says Mr. George K. Holmes, "can scarcely be considered to have existed. The plow was little used. The hoe was the implement of industry. Made at the plantation smithy, the blade was ill formed and clumsy, and the handle was a sapling with the bark left on. After a succession of crops had exhausted the soil, the cows were sometimes penned upon it." This was the state of farming in Georgia in 1790, and it represented the South as a whole. The same authority states that "the Massachusetts farmer who witnessed the Revolution plowed his ground with a wooden plow." The age of iron and steel had not yet begun, and some of the tools of the colonial farmer were quite as primitive as those of the days of the Roman Republic. His tools were costly

and crude. Of machinery there was none, and the principal implement was the wooden plow. Not until the beginning of the past century had the harrow made its appearance as a farm implement, and it was not earlier than the middle of the nineteenth century that modern implements and machinery actually entered into the equipment of the American farm. "In comparison with the agriculture of the present time, that of the previous century and of the earlier half of the present century was crude, wasteful, uneconomical, expensive, laborious, and unscientific."[1] It is impossible to say at just what dates the older order of cultivation broke up and the newer methods began, because they began at different times in different places. Nevertheless, the first period in this development extended down not far from the time of the civil war. After the close of the civil war, generally, the new era of machinery and of the application of science to the methods of cultivation began. Railroad building throughout the Central and Western States increased the demand for variety of farm products. Variety in commercial demand reacted upon the system of farming by favoring a more economical system of rotation and restraining the ruinous practice of single cropping. The same tendency to diversification in production received a new impetus from the great fall in prices of cereals and live stock, first about 1873, the second time about 1885, and lastly in 1893–1896. The effect of these successive reductions was to develop dairying and fruit raising throughout the East and the West. The fall in the price of cotton in the South contributed to the development of trucking in the tide-water territory and tobacco growing generally, and to a more extensive cultivation of cereals and maintenance of live stock throughout the Piedmont and the mountain sections.

As early as 1860 the agriculture of the Middle States was regarded as having reached the limit of development in certain directions. The production of wheat, for example, had fallen four and a half millions of bushels behind that of 1850, while the population had increased one and a half millions. The soil of New England was looked upon as exhausted by tillage. Wheat had ceased to be remunerative there. The causes assigned for the decline in the Middle States were even then given as (1) competition with the West and consequent low prices, and (2) the want of sufficient capital to admit of a better system of farming. The methods of farming were such as to exhaust the organic matter from the soil and to give little or no attention to the maintenance of fertility by manuring. It is reported that "many continue to grow wheat in the same manner and with as little preparation as when the country was new and the soil abounded in available plant food." An undue amount of attention was given to wheat. It

[1] Yearbook of the Department of Agriculture, 1899, article on "Progress of Agriculture in the United States," by Geo. K. Holmes.

was not uncommon to grow wheat every other year on the same land. This was the case in western New York, then regarded as the finest wheat section of the East. At this juncture it was the continuous opening of Western lands that saved the East from the necessity of entering upon intensive cultivation. The public land policy postponed this general change in agricultural methods for fully fifty years.

AGRICULTURAL IMPLEMENTS.

The opening of the public lands on so extensive a scale created a demand for machinery. The utter insufficiency of labor to harvest and thresh the grain called into use that series of wonderful implements which must rightly be regarded as among the great inventions of the nineteenth century.

The period between 1870 and 1880 was the one of most rapid introduction of farming implements. Comparison of the rate of increase in the valuation of the three principal forms of farm property on a gold basis shows the following result. The currency valuations of the figures of the census of 1870 are reduced by one-fifth:

Percentage of increase in valuation of farm property, by decades, from 1850 to 1890.

[From the Abstract of the Eleventh Census, p. 99.]

Items.	1850 to 1860.	1860 to 1870.	1870 to 1880.	1880 to 1890.
Lands, fences, and buildings	72	11	87	80
Live stock on hand	100	12	28	47
Implements and machinery	62	9	50	21

During the decade from 1870 to 1880 the value of farm implements and machinery doubled, reckoning on the gold basis of valuation. Neither of the other kinds of farm property increased so rapidly. The lower percentage of increase in the value of farm machinery for the decade from 1880 to 1890 is more apparent than real. With the fall in the prices of machinery the amount of machinery bought has increased at a more rapid rate than this percentage would indicate.

The progress of agriculture in the United States has always been made in spite of the scarcity of farm labor, so that the invention and use of agricultural implements has been a necessity of the conditions through which the country passed from its very beginning. The effect of the civil war was to withdraw an unusually large number of people from the cultivation of the farms. The impetus given to manufactures and to transportation by this struggle, together with the influence of high prices upon production, all tended to draw upon the farm for the purpose of supplying the militant as well as the peaceful enterprises of the nation. This gave new inducement to the invention

and manufacture of agricultural implements. The Commissioner of Patents of that period states that "notwithstanding half a million of our agriculturists have been withdrawn from the farm to engage in military service, still the number of applications for patents on agricultural implements, including reapers, beehives, horse hayforks and horse hayrakes, has increased from 350 in 1861 to 502 in 1863."

At the London exhibition of 1851 the general excellence of American plows, reapers, churns, scythes, axes, forks, and other implements was acknowledged by the admission of the judges from all parts of the world. The triumph of American reapers marked a new era in European agriculture. It was estimated by the census of 1860 that the average value of farm implements and machinery for each farm of 100 acres was $150. In New England the value of machinery employed averaged $1.34 per acre of improved lands, while in the Middle States it was $2.07 per acre, in the Western States, $1.56, and in the Southern States $1.48 per acre. This in general was the condition of the country with regard to agricultural machinery at the period when the lands of the East had deteriorated in fertility and the virgin plains of the West were just beginning their phenomenal yields of grain. The East had neither the capital nor the system of culture to meet competition from the West with its new machinery. The chief causes why the East failed to meet the competition of the Western lands was to be found (1) in the exhaustion of the land; (2) in the absence of surplus capital with which to experiment, in order to inaugurate a more intensive system of culture, and (3) in the superior implemental equipment of the Western grain producer. Moreover, the state of agricultural knowledge was deficient in adaptability to change.

The application of machinery to harvesting and handling crops has not by any means reached its limits in increasing the resources of the farm. The grain binder has had as great an influence as any piece of machinery upon the extension of the growth of wheat. The corn harvester, the corn-husking and the fodder-shredding machines have been upon the market since 1885. It was estimated, according to the Iron Age, that about 35,000 corn harvesters were sold during 1901, and that between 8,000 and 10,000 husking and shredding machines would be sold before the close of the season. These facts indicate a new direction in which machinery is making triumphs. Here, as elsewhere, the scarcity of labor has made it necessary for the farmer to resort to machinery. This same scarcity is being felt throughout the West in the corn-husking season, especially when the demand for labor in manufacturing industries coincides with the harvesting season in the corn belt. But the saving of the labor item of expense will be less profitable than the gain which comes from the increase in the fodder crop resulting from the shredding of the corn

fodder. The yield of fodder to the acre is as great in tonnage as the average crop of hay, and when shredded it is said to be equal to hay in feeding value. Heretofore the farmers of the West have been unable to save this enormously valuable fodder crop because labor was not to be had for cutting and shocking it by hand. The best that they could do was to drive through the field with a wagon, husk the ears from the stalks, and leave these immense reserves of fodder to waste and rot on the ground. Machinery has therefore added immensely to the possibilities of maintaining live stock on the western farm. This would seem to be one of the present and prospective elements of strength in the agricultural situation throughout the corn belt, if not throughout the entire country.

MAINTENANCE OF FERTILITY.

At the basis of all rural prosperity lies the preservation of the soil's fertility. The most prominent cause of decline in the productive condition of land is found in the lack of proper management to this end. It has been reported that in South Carolina seven or eight millions of dollars are spent every year for fertilizers. There the complaint is made that manure is too heavy to haul into the fields and is therefore left to go to waste. In the Northwest, in the Dakotas, it is stated that farmers had been raising grain by simply scattering it on the surface and dragging it in without doing any plowing of the soil except once in five or six years. Where the seeding has been done by contract without supervision it has frequently been done in a slipshod manner. Farms in North Dakota have until recently been sowed to wheat for many years in succession. Though the last year's crop was one of extraordinary yield, nevertheless such treatment simply shows that the resources of the soil must be gradually exhausted unless variation in crop relieves the strain upon the elements of fertility. This is one of the objections to bonanza farming. While its methods may seem more business-like than those of many small farms, it still remains true that a farm cultivated on the wholesale plan and continuously robs the soil of its fertility and, if continued long enough without replenishment, will necessarily extinguish profits.

The use of commercial fertilizers on cotton, tobacco, and grain crops has become so general throughout the East and the South as to be a constant part of the farmer's annual outlay. Discoveries of phosphate beds in South Carolina, in Florida, and later in Tennessee, have given the Southern States a special advantage in the use of this species of fertilizer. They have not been slow to avail themselves of this means of increasing the productiveness of their soils. Inferior brands have been driven from the market. The State authorities have intervened between manufacturers and consumers of fertilizers to test the stand-

ard of quality by inspection and analysis, thus protecting the farmer against misrepresentation. Exclusive dependence on commercial fertilizers has, however, greatly retarded attention to the use and preparation of farm manures. Mr. Hammond, with others, considers that on this account commercial fertilizers have been a positive injury to the progress of Southern agriculture.

ROTATION OF CROPS.

In maintaining the fertility of soil, rotation of crops is coming to play a more important rôle, especially in the less advanced sections of the country, whose crop system has been deficient in leguminous plants. A shorter rotation series is giving place to a longer one, thus relieving the soil to a greater extent of the drain caused by a smaller variety of crops.

Rotation as a means of reclaiming and maintaining the fertility of the soil by the growing of leguminous plants, such as red clover, stock peas, etc., has spread in the South in recent years. Together with this method has come that of the more intensive system of cultivation of fruits for commercial purposes, including strawberries, tomatoes, etc., in localities near to shipping points. The old system, which these changes superseded only within a decade or so, was that of raising cotton or corn on the same land year after year until the land became utterly impoverished.

THE LIVE-STOCK SYSTEM OF MAINTAINING FERTILITY.

Experience seems to have demonstrated that stock growing and stock feeding are essential to permanent prosperity in farming. The present state of agriculture east of the Mississippi River has to be considered in this light, and somewhat apart from the conditions west of that stream. Somewhat more accurately, the East, or New England, and the South, have to be judged separately with regard to the condition of farms. The abandoned farms in the East, and the unproductive fields of the South, together with the diminished yield of some of the Middle States, have forced the farmer to reckon with the limited resources of the soil. But everywhere there is a marked tendency to have recourse to the same remedy. In many of the best farmed portions of the Middle States it has been the practice for a quarter, or possibly half a century, to restore and maintain fertility by means of manure. For this purpose the straw and the corn fodder were necessary elements of production. The winter function of live stock was to build up a supply of manure sufficient to fertilize at least part, if not all, of the fall sowing in grain. In the interior of the country east of the Mississippi the old practice of burning the straw to get rid of it appears to have passed away at last, and the utilization of the live stock during the winter for the manufacture of a manure supply

has become an established yet often neglected method of bringing a farm back to a prime condition of fertility. In this process of preparing manure as a fertilizing factor a radical step in advance was taken when it was learned that manure kept under cover of a roof was far more valuable than one which had been drained by the rains of winter, spring, and summer.

Present-day farming has learned another important fact in the relation of commercial fertilizers to barnyard manure as a means of restoring fertility. Commercial fertilizers are used as supplementary aids, owing to the fact that they contain only two of three elements of plant food and do not furnish the material for the formation of humus in the soil. The function of manure is to give growing plants a deeper and a wider range of appropriation of plant food. There is no substitute for this, and the only source from which it comes is decayed plants. Where lime is used for fertilization, as in eastern Pennsylvania, some vegetable material is necessary for giving to the lime its full effect upon the crops. Whatever form of commercial fertilizer may be used, the vegetable elements of manure are fundamental in increasing their efficiency.

It is from this standpoint of agricultural intelligence that one has to look upon the change which has taken place in Eastern as well as Western agriculture. The answer to the whole question of what to do to escape from the exhausting of soil fertility is found in keeping more stock. Live stock has ceased to be a side issue in the organization of the farm, and it no longer serves its main purpose in supplying food for the farm family, but has become the keystone to the whole structure of development in the newer farm economy, which recognizes that the point of diminishing return to labor and capital can be indefinitely postponed only by utilizing live stock of such types and condition as will pay for themselves the year round, both by helping to maintain the fertility of the farm and by contributing to its cash income.

The economic function of live stock has thus become paramount as compared with the crops of the farm which are subordinate in this system. The quantity and the kind of crop that a farmer under the live-stock economy can produce is dependent on his live stock. That being the case, the crops grown must be such as will maintain the stock all the year round with as little outlay as possible for feed not produced on the farm. With a supply of farm-made feed for stock, which regularly contributes a net gain to the fertility of the farm, an endless chain of economic activity is maintained. There is no danger that the soil will cease to bring a fair return to its cultivator; and the natural increase of the stock, together with the steady rise of values which comes with the growth of population, will guarantee the farmer against loss in the long run.

Only those who have examined the facts in the development of American agriculture will realize how recent has been the extension of this system of farming over the agricultural States of the interior of the country. Only twenty-five years ago it was taken for granted that the chief aim of farming was the preparation of a commercial surplus of raw materials for market. When it was found that this policy was wasting fertility in the face of falling prices, the introduction of live stock as a larger factor in farm investment followed naturally. It was a short step, but one of fundamental meaning to the profitable pursuit of agriculture when the waste matter of the vegetable growth and animal life were combined to restore and maintain permanently the fertility of exhausted farm lands.

The entrance of American agriculture upon this era of its history is marked by the utilization of such by-products as straw in the making of manure in wheat-growing sections, by the use of fodder for stock feeding in corn-growing sections, and the use of cotton seed both for fertilizing and for stock feeding in the cotton belt. It had become necessary to resort to these hitherto unemployed sources of wealth to make farming profitable. The rediscovery of their worth has put farming on a new foundation.

CONDITIONS IN DIFFERENT SECTIONS.

There are now, approximately, 5,700,000 farms in the United States. The policy of development outlined above applies especially to those in the Northern and Western section of the country where no single crop now dominates the system of culture as cotton has in the South. Yet even in the South the same policy is here and there beginning to prevail, though somewhat more slowly and less generally, as a means of restoring fertility to the land. At the present time, however, Southern agriculture is based rather on commercial fertilizers to sustain a single cropping system of cultivation than on live stock. The use of cotton seed for fertilizing is but the crude beginning of a self-restoring system of culture. The demonstrated value of cotton seed for feeding purposes is known, but the quantity and quality of stock and fodder are both wanting to complete the self-sufficing system of maintaining fertility.

Analysis of conditions thus far brings out the fact that the conditions of permanent prosperity have received a fuller degree of development in the Northern and Western States. There is in Southern agriculture no such organization of the farm by which the fertility of the soil is guaranteed against exploitation in the present or future. The South is still in the extensive stage of cultivation.

Agricultural statistics make it clear that the 14 Southern States have developed at a more rapid rate than other portions of the country, not only in rural population, but in farm families and in the number

of farms. Nevertheless, apart from the insistence upon diversification of crops and a more general production of the farm's supplies, the main trend of Southern development in the agricultural industry as a whole seems as yet to be devoid of any scientific foundation for permanent prosperity.

A fall in the price of cotton below the level of profitable cultivation may leave the major portion of the plantations without a business basis on which to sustain credit or meet obligations. While this is the case the tenure of prosperity can not be permanent, because it is not sufficiently capable of adaptation to changes in the market.

Two opposite systems prevail in the two great agricultural belts of the country—the cotton belt and the corn and wheat belt. In the cotton belt the prevailing policy in the use and treatment of land is still expansive and hence exhaustive, because the resources of the farm are not organized in such a way as to provide for self-fertilization of the soil. The dependence is still mainly upon commercial fertilizers to keep up the productivity of improved areas. In the corn and wheat belt, on the other hand, what tends to amount to a self-sufficing system of recuperation has impressed itself permanently upon farm policy. The economic tendency of the former system is in the long run suicidal; that of the latter, dependent solely on good management for permanent prosperity. The live-stock system of farming is not only the key to the trend of existing practice, but is furthermore the pivotal factor in the adaptation of the business of farming to changes in the market. The increase or decrease of quantity or changes in the variety of stock puts into the hands of the farmer the means of adjusting his enterprise to commercial conditions affecting his products.

One of the most remarkable changes which has taken place in the greater portion of the cultivated area of the United States in the past ten years or more is the transition of farming from a cereal to a live-stock basis. The economic function of live stock in the development of the resources of land is better appreciated in practice and is being more systematically developed than ever before in the history of the country. This change has revolutionized the position of the agricultural producer in his relation to the market for his products. Live stock in commerce, directly and indirectly, has acquired an increased importance which can be compared only with the progress of the iron and steel industry in manufactures within the last decade of our economic development.

Coincident with this great transformation in agriculture the production of live stock has seen the gradual decline of the ranch system and the substitution of the farm system of rearing and feeding live stock for commercial purposes. With this change from the ranch method to the farm method of production has occurred an improvement in the breeds of stock of various kinds, whereby the quality of

the product has been so greatly improved that the original types of cattle, for example, as represented in the long-horned Texas steer, have practically disappeared. In his place are now found a few superior types, including such as the Herefords, the Short Horns, the Anguses, and the Galloways. There is possibly no better illustration of the influence of agricultural depressions on the policy of the producer than this change in the breeds of cattle. Among other results of this attention to breeding on the part of the producer, one of the most far-reaching is the advantage which this improved type of beef cattle has given the United States over her South American rivals in the markets of the world. The strength of the business of the United States as a producer of beef for foreign consumers lies at the present time not so much in numerical preponderance as in the superiority of the quality of stock which the country is now in condition to supply indefinitely.

Another practice called forth by the demands of stock upon the farm is that of using certain fodder crops for the twofold purpose of restoring nitrogen to the soil and of maintaining the stock on roughness. Feeding and fertilizing value are thus combined in the same growth. The restoration crop not only rests the land, but sustains the herd while it contributes to the soil's enrichment.

IMPROVED TILLAGE.

One of the results of practical experiment and of scientific research about which the experience of both the Old World and the New are agreed is this, that the productiveness of any soil depends as much upon its physical condition as upon the amount of plant food it contains. This conclusion lies directly in the path of intensive cultivation. "It has been frequently shown that the soils of abandoned farms, for example, contain large amounts of plant food, but are still quite infertile."[1] By proper and careful methods of cultivation such soils have been made to produce large crops. This fruitfulness is brought about through improvement of the mechanical condition of the soil by drainage, careful and frequent working of the land, and the growing and plowing under of leguminous and other green crops. The new soil culture, therefore, lays the emphasis on the condition of the soil rather than on its constitution.

One problem involved in this principle's application is that of enabling the soil to appropriate and conserve the supplies of moisture which fall during seasons when crops are usually not growing, to be drawn upon during the period when rainfall is small and moisture is most essential. The continuous cultivation of land tends to exhaust the plant food, where

[1] American Agriculturist's Yearbook, 1899, p. 193.

there is no addition of manure. The original supply of vegetable material in the soil is thus withdrawn, and the condition of looseness and therefore of receptivity of the rain is lost. The land can not store up in times of excessive moisture what is most needed in the drier periods of crop growing. The two means by which the proper supply of moisture has been provided for are drainage and thorough tillage, but none of these systems can be maintained in such a way as to keep up the productivity of the soil without the application of humus in the form of stable manure. For that purpose throughout the United States there has been a notable increase of attention to this feature in the system of farming. This has been accompanied by an equally wonderful increase in the quantity of hay and rough feeding material, for cattle especially, and these two elements, cattle and feed, have together supplied stable manure as a means of maintaining the fertility of the farm. It is difficult to appreciate how completely the last decade of agricultural progress has changed in the directions indicated above.

FORESTS.

The maintenance of fertility is intimately connected with forests. A worn-out soil, as is well known, is frequently permitted to reforest itself and thus, in the course of 10 or 15 years, feed the soil with the vegetable matter which exacting cultivation had exhausted. Apart from this, however, the influence of forests upon the natural condition of the country gives them a function which no other agency can satisfactorily perform.

The function of the forest in the economy of nature has been clearly described in these words: "With a watershed protected by a growth of timber the winter rains and melting snows are held in reserve and given up gradually through the summer, supplying the streams with the normal amount required during the long dry season for the irrigation of field, orchard, and vineyard. But when those watersheds are denuded of their protecting growth the rain and melting snows are hurried rapidly into the streams and precipitated into the valley at a season when irrigation is not needed, and when the dry season comes these streams have either ceased to flow altogether or have dwindled to insignificant rivulets, and irrigation becomes impossible."

Some years ago, according to an official report, it was found that the Susquehanna River, previously a navigable stream, had begun to change its character; that it was seriously flooded in winter and early spring, and there were long periods in summer when the flow diminished to such an extent that the river was no longer navigable save for vessels of the lightest draft. An inquiry was ordered by the Government, and the result of the investigation was to affirm the speculation that this

change in the character of the river was due to the removal of the forests in its basin, whereby the ground was robbed of its protective covering of roots, moss, leaves, and porous soil which serve as a natural reservoir, holding back the water and compelling it to descend slowly to the stream. It was estimated by the commission that four-fifths of the rainfall in a forest area is held back by the forest floor, so to call it, and only one-fifth is carried away at once to the rivers so as to cause floods, but in the case of a watershed denuded of forests the proportions are reversed. Therefore, it is obvious that the preservation of forests or woodland areas has a great deal to do with the fertility and well-being of a country.

Apart from the natural function of forests in maintaining a high state of cultivation in any portion of the country, there is an economic dependence of the farm upon wood lands. The extent of this dependence may be gathered from the figures of the wooded area incorporated in the farm acreage of the United States. According to the census of 1890, our farms aggregated 623,000,000 acres, of which about 200,000,000 acres were under wood. A very large proportion of this woodland area is embraced in those generally important adjuncts of the farm known as wood lots and in timber tracts held chiefly by farmers for their value as sources of timber. This is especially the case throughout the East.

Profitable farming throughout a considerable portion of the West is intimately connected with the growth of trees. Fuel, fencing, building material, and protection from wind are some of the principal uses of trees in those regions. Forestry has now become a feature of State activity in aid of agriculture, to the end that wooded areas may attain the greatest usefulness and most permanent value to their owners.

The forestal resources of the United States in their relation to agriculture consequently present a new series of problems which farm interests are seriously considering. In the earlier years of the last century, and even down toward its close, agricultural progress generally required the clearing of lands for cultivation. The forests were a hindrance to progress. After a century and a half of such effort to hew settlements out of the dense woods on the frontier, it is no wonder that the utility of forests came to be undervalued and that they were wastefully destroyed. The work of denudation received a fresh impulse with the progress of railroad building, whereby lumber could be brought from places before inaccessible. Then came the growth of foreign demand on the Southern lumber supply. Now, after half a century of exploitation, the country has apparently reached the danger point, at which it becomes necessary to protect regions not suitable for farming, but necessary for the life of streams and rivers.

The diminishing streams and the higher prices of lumber are together awakening the people to the new conditions. These conditions have been changing rapidly during the past thirty years. Already some of the grandest forests of the world are robbed of their wealth, the value of the land they covered is enormously lessened, and the country as a whole is the poorer for the lack of a foresight that might have preserved them. Since the act of March 3, 1891, the President has segregated 39 national forest reservations by proclamation, embracing an area of more than 46,800,000 acres, or over fifteen times the size of Connecticut. These are mostly in the Rocky Mountain and Pacific coast States. In the East and South generally no such authority exists to enforce such a policy. Yet here the feeling is growing that in some way the preservation of woodlands must be accomplished, not so much for the sake of the timber as for the purpose of conserving the water supply both for country and for city. "The capacity of a country," says Prof. William H. Brewer, "for supporting a dense population depends upon agriculture, and in many of our States, which are otherwise rich in natural resources, the capacity of their agriculture depends upon the preservation of their streams for irrigation. There is practically no more public land suited for agriculture without irrigation, now left for settlement and occupation, and in more than one district the agricultural population has actually diminished within the last few years because of the diminished flow of water from the neighboring mountains caused by the destruction of forests."

The problem of restoring forests on watersheds is of vital interest to the entire area of farms and pastures dependent upon any such section. According to Mr. T. P. Lukens, of Pasadena, Cal., the fact that the depletion of forests causes extremes of flood and drought is shown by the present condition in southern California, as contrasted with the same area prior to the inroads of unrestricted sheep and cattle grazing, wasteful methods of lumbering, and destructive fires. Originally the mountains and valleys were well forested and the streams flowed continuously. The effect of these abuses is seen in the decreased flow of streams and the rapid deterioration of the originally productive soil. The remedies proposed are the absolute prohibition of grazing, except within fenced areas, the employment of rangers to guard against fires and to enforce the grazing regulations, and the inauguration of improved methods of lumbering, under trained foresters.

X. DISTRIBUTION OF AGRICULTURAL PRODUCTS.

WATERWAYS.

Nothing has been more surprising to the student of commerce than the inability of our interior waterways, especially our rivers, to compete with railroads. In 1880 the receipts of cotton by river at New Orleans were 64 per cent of the entire arrivals at that place; in 1890 they were 20 per cent, and in 1899 only 15 per cent, showing a marked decline in the river cotton trade. The rail receipts meanwhile had increased enormously. Comparing 1880 and 1899, we find that in the former year cotton receipts at New Orleans by river amounted to 1,087,522 bales; by rail, 627,577 bales. In 1899 the receipts by river were 343,450 bales, and by rail 1,935,177 bales.

The same tendency on the part of railroads is shown in the receipts of flour. Of 734,027 barrels arriving at New Orleans in 1899, only 71,962 barrels were brought by river; and of 37,479,500 bushels of grain received at that port, only 2,754,928 arrived by river.

It would be a great mistake to measure the influence of river traffic at such a port as New Orleans by the proportion of freight which it bears to market. A stream which would carry only 10 per cent, or possibly 5 per cent, of the total receipts would still continue to have a very marked influence in determining the rate at which railroads would carry goods within territory included in the basin of the stream in question. The river traffic really makes a base rate which railroads not only can not ignore, but must, in the long run, conform to in practice. For example, the Mississippi River makes the rates from St. Louis to Memphis or New Orleans. Though Chicago is not situated on the Mississippi River, the interest of railroads running southward would lead them to give rates for south-bound shipments from Chicago which would in some measure enable that city to compete with shipping points such as St. Louis on the Mississippi River. Rival cities and industries bring such influence to bear upon railroads as to make favorable rates for purposes of competition with favorably situated centers of distribution. Another illustration of the influence of water rates is seen in the competition between the Atlantic coast and New Orleans for the trade of the trans-Mississippi States. By means of the New York State canals and the Lakes it is possible to distribute such heavy commodities as sugar into the Upper Mississippi Valley by water over a greater part of the distance. The effect is that all railroads which would compete for a share in this trade are obliged to adapt themselves to this low rate of transportation. Rates of freight by river from St. Louis to Memphis, Vicksburg, and New Orleans have declined rapidly since 1880. The freight to New Orleans in 1880 on a sack of grain of

100 pounds was not lower than 20 cents, in 1900 it was 10 cents; on flour and meal per barrel in 1880, 30 cents, in 1900, 20 cents, a decline of one-third. Hay per hundred pounds in 1880, was 20 cents; in 1900, 12½ cents.

These river rates may be compared with the rail rates from St. Louis to Southern cities. To New Orleans in 1882 the rate was 65 cents per barrel of flour; in 1900, 34 cents. Grain in sacks per hundred pounds in 1882 was 33 cents; in 1900, 20 cents. Hay in 1882, 33 cents; in 1900, 20 cents.

It is frequently taken for granted that the use of waterways in the distribution of farm products has generally declined on account of the competition of railroads. A study of representative movements does not always justify this conclusion. For example, the use of the Ohio River in getting farm products from West Virginia and Ohio to such distributing points as Cincinnati can not be said to have decreased. Both receipts and shipments of cotton at Memphis for six years preceding 1894–95 and for six years following that cotton season indicate that in spite of the multiplication of railroads connecting the cotton fields with this great interior market, the waterways have held their own as carriers of cotton. For the first six-year period preceding 1894–95, the average yearly receipts of cotton at Memphis by river were 105,263 bales, and for the six years following that season the average was 111,395 bales, showing that there has been an average yearly gain of over 6,000 bales. The shipments of cotton from this port lead to substantially the same conclusion. For the six-year period before 1894–95, the average yearly shipments were 28,706 bales, while the average for the six-year period following that season amounted to 27,655 bales.

On the whole it may be said that the use of waterways for handling farm products has been retarded by the use of facilities which had failed to improve with the progress of the country in other respects. Another cause for the apparent backwardness of river transportation especially is the too general prevalence of individual control as compared with consolidated management such as applies to the shipping of coal on the Western rivers and the Lakes, or of general merchandise on the Atlantic coast. The leading lines in the Atlantic coastwise trade have close traffic relations, if they are not generally controlled by railroads. The same is true to a smaller extent on the Lakes, where each of the trunk line railroads has its service of steamers.

RAILROADS.

Among American waterways the Lakes exercise the chief influence in the distribution of agricultural products. However, at the present state of competition among the east-bound railroads between the Mississippi and Missouri rivers and the Atlantic seaboard there is such a

degree of competition as to largely neutralize the influence of the Lakes, especially in the handling of so important a commodity as flour. Thus far "community of interests" has not succeeded in preventing the demoralization of the rate situation. From the standpoint of the shipper and the producer, as well as the consumer, such competition among carriers would be advantageous if the smaller shipper were in a position to take advantage of the cut rates. As a matter of fact the cutting of rates gives to large shippers the secret rate and leaves to small shippers the open or higher rate. The effect therefore is to force the small trader out of business. This applies not only to the methods of handling farm products, but also to manufactures and any other industry in which shipping is an important feature.

This constantly active or ever-recurring competition between the great interior centers of concentration and the seaboard centers of consumption and export really regulates the rate to the Gulf ports to possibly even a greater extent than the river rate or the lake-and-canal rates do.

Even in this case grain has been the chief farm product handled; flour has never been given the prominence in lake traffic that grain enjoys, and is more generally distributed by rail even in competition with lake shipments. There seems to be a disposition on the part of flour shippers to avoid the lake-and-rail routes to the East. On that account and to that extent the railroads enjoy an exceptional advantage. They seem to have taken advantage of this preference by making a proportionately higher rate for flour than for grain to the seaboard for export. The effect of this has been to stimulate the exports of wheat and to restrict the exports of flour; in other words, to transfer the milling business from this country to Europe, where the grain goes. A committee of Northwestern millers in presenting their side of the case allege that in railway practice wheat and flour are carried at essentially the same rates in domestic trade, but that the difference in the export rate ranges from 3 to 10 cents a hundredweight, averaging 6 cents. This makes it of advantage for England to import wheat instead of flour, and commercial statistics show, they say, that we are exporting only 20,000,000 barrels of flour to every 132,000,000 bushels of wheat.

Furthermore, the exports of flour have fallen off very decidedly and those of wheat increased. The following table, compiled by the Railway World for the first 8 months of 1901 (subsequent figures having been supplied directly from the current publications of the Treasury Department), shows the prevailing condition under which the flour and wheat trade with foreign countries has been conducted during the past year:

Exports of wheat and flour, 1900 and 1901.

Month.	Wheat.		Flour.		Barrels of flour exported—	
	Bushels, 1901.	Per cent increase over same month in 1900.	Barrels, 1901.	Per cent increase over same month in 1900.	Per 1,000 bushels of wheat, 1900.	Per 1,000 bushels of wheat, 1901.
January	12,780,711	94.75	1,448,237	−1.69	224	113
February	10,901,993	69.95	1,570,256	.31	244	144
March	11,573,666	78.53	1,385,873	27.01	168	120
April	13,907,466	87.75	1,953,821	37.06	192	140
May	15,955,783	71.57	1,649,844	−15.58	210	103
June	12,245,764	40.48	1,501,127	−22.57	222	123
July	18,460,991	232.58	1,555,365	12.39	249	84
August	26,694,832	221.48	1,952,344	27.91	156	62
Total, 8 months	122,521,206	108.58	12,716,867	4.89	206	104
September	16,879,036	58.62	1,511,496	−5.92	156	92
October	15,472,695	43.82	1,707,233	6.86	149	110
November	13,656,630	65.51	1,694,328	10.45	186	124
December	10,297,636	−5.27	1,621,996	.07	149	158
Total, 12 months	178,317,354	80.22	19,284,779	4.14	187	108

The wheat trade has been stimulated abnormally, and the flour trade has fallen behind. An examination of the prices of wheat and flour at interior markets and milling points shows that this situation is not attributable to relatively high prices for flour where it is manufactured. The flour-milling interests have pointed out again and again that the cutting of grain rates to the seaboard for export has had the effect of awakening a demand for wheat instead of flour in European markets. One outcome of this is to put the American milling industry at a serious disadvantage. There seems to be no remedy except the introduction of some authority to maintain railroad and ocean rates on wheat.

The Interstate Commerce Commission made a careful study of this question of export and domestic rates, and particularly the discrimination in export rates between wheat and flour, in a case decided on August 7, 1899. Its conclusion is contained in this paragraph:

"This Commission is of the opinion that public policy and good railway policy alike require the same rate upon export wheat and flour. Such rates tend to develop both the industries of the United States and the traffic of the railroads. We are not, however, here settling national or railroad policy. We are simply administering the act to regulate commerce, and in view of all conditions as we find them we do not feel that charging a somewhat higher rate on flour than on wheat for export is in violation of that statute. We do think that the published difference is too wide, and that the rate upon flour for export ought not to exceed that upon wheat by more than 2 cents per 100 pounds."

Chicago and East St. Louis are the two greatest centers east of the Mississippi River for merchandise requiring shipment to Atlantic seaboard cities. Through rates from Chicago to New York have for

many years been used as the standard or basis for the construction of tariffs to be applied from cities located in the territory north of the Ohio and Potomac rivers and east of Chicago and the Mississippi River, which are directly or indirectly in competition for Eastern business. Such rates are therefore of great importance to the shipping public.

The rates herewith presented are from Chicago and East St. Louis, and cover the transportation of live stock, provisions, dressed and salted meats, grain and grain products to the principal Eastern seaboard cities.

Credit is due the auditor's office, Interstate Commerce Commission, for assistance rendered in the construction of this table, which is taken from the Crop Reporter.

Published transportation rates on agricultural products, 1901.

[Rates in cents per 100 pounds.]

From—	To—	Live stock.			Provisions.		Dressed meats.		Meats salted in bulk.		Flour.	
		Cattle.	Sheep.	Hogs.	Domestic.	Export.	Domestic.	Export.	Domestic.	Export.	Domestic.	Export.
Chicago	Boston	28	30	30	33	30	45	45	39	35	17	15
Do	New York	28	30	30	30	30	45	45	35	35	15	15
Do	Philadelphia	26	28	28	28	28	43	43	33	33	13	13
Do	Baltimore	25	27	27	27	27	42	42	32	32	12	12
Do	Newport News	25	27	27	27	27	42	42	32	32	12	12
Do	Norfolk	25	27	27	27	27	42	42	32	32	12	12
East St. Louis	Boston	33	35	35	38	35	50	50	44½	40½	19½	17½
Do	New York	33	35	35	35	35	50	50	40½	40½	17½	17½
Do	Philadelphia	31	33	33	33	33	48	48	38½	38½	15½	15½
Do	Baltimore	30	32	32	32	32	47	47	37½	37½	14½	14½
Do	Newport News	30	32	32	32	32	47	47	37½	37½	14½	14½
Do	Norfolk	30	32	33	32	32	47	47	37½	37½	14½	14½

From—	To—	Other grain products.		Grain.									
				Wheat.		Corn.		Oats.		Rye.		Barley.	
		Domestic.	Export.	Domestic.	Export.	Domestic.	Export.	Domestic.	Export	Domestic.	Export.	Domestic.	Export.
Chicago	Boston	17	15	17	13½	17	13½	17	13½	17	13½	17	13½
Do	New York	15	15	15	13½	15	13½	15	13½	15	13½	15	13½
Do	Philadelphia	13	13	13	12½	13	12½	13	12½	13	12½	13	12½
Do	Baltimore	12	12	12	12	12	12	12	12	12	12	12	12
Do	Newport News	12	12	12	12	12	12	12	12	12	12	12	12
Do	Norfolk	12	12	12	12	12	12	12	12	12	12	12	12
East St. Louis	Boston	19½	17½	19½	15½	19½	15½	19½	15½	19½	15½	19½	15½
Do	New York	17½	17½	17½	15½	17½	15½	17½	15½	17½	15½	17½	15½
Do	Philadelphia	15½	15½	15½	14½	15½	14½	15½	14½	15½	14½	15½	14½
Do	Baltimore	14½	14½	14½	14	14½	14	14½	14	14½	14	14½	14
Do	Newport News	14½	14½	14½	14	14½	14	14½	14	14½	14	14½	14
Do	Norfolk	14½	14½	14½	14	14½	14	14½	14	14½	14	14½	14

The average annual freight rate on wheat in cents per bushel during 1900, from Chicago to New York, was as follows: Lake and canal, 4.42; lake and rail, 5.05; all rail, for domestic consumption, 9.98; for export, 9.08. The average ocean rate, New York to Liverpool, was $3\frac{3}{8}$ pence.

WAGON ROADS.

The extension of steam railroads over the country to nearly the full measure of its demands for the time being has helped to call attention to the backward state of the public highways. Practically all of the surplus products of the farm have to be handled by teams for a greater or less distance before they reach the railroad station, there to enter into the trade of the country. The backward state of these highways has added largely to the expense of this initial stage of distribution between producer and consumer. This being recognized as one of the weakest features in our system of transportation, there has been much effort made, both by way of legislation and by way of experiment, to effect improvements in road building. Recently railroads have begun to promote highway improvement by practical exhibitions of methods of construction. In Maryland a division of highways has been created under the State geological survey. Careful inquiry was first made into the road question in that State. The needs of localities were set forth and suggestions made as to the method of accomplishing the improvement. Documents have been distributed showing the estimates of expense for building, and the amount of money which might be saved per annum if roads were in good condition. In this case it is estimated that the saving would be $3,000,000 per annum. There are 14,483 miles of public roads in Maryland, or about 1.47 miles to each square mile of territory. This mileage includes that of 51 toll roads, the total length of which is 497 miles. Over 13,000 miles of Maryland roads are composed of earth, 890 miles are built of stone, 225 miles of gravel, and 250 miles of shells. Only 2,021 miles, or about one-seventh, are classed as main roads.

In 1898 the governor of Pennsylvania appointed a special commission to investigate roads, especially in that State, and present a suitable bill for their improvement, involving changes in the present system of road building. The older system provided for township care of the roads under county control, though the relation between the county supervision and township management was in fact quite remote. The legislature of New York likewise took up the question about the same time. In Massachusetts appropriations have been made amounting to more than one-half million dollars annually for building public roads. There it is the practice to build stretches of improved highways at State expense, the town authorities cooperating to keep the roads in proper condition. In New Jersey a fund is regularly expended for improvement of roads. The result has been one of the best systems to be found in the country. In Connecticut over 500 miles of road have been completed since the State road system was adopted several years ago. As much more is now in progress of improvement or has been

projected. The plan there is to have the State treasury bear one-half the expense, the county one-fourth, and the town the other fourth.

Elsewhere throughout the country much improvement has come from continued agitation. In North Carolina, running into the country in various directions from the city of Charlotte, macadamized roads have been building for the past ten years, generally by the aid of convict labor. In Kentucky the toll roads have been bought up and made free as rapidly as possible. The turnpikes are turned over to the counties in consideration of the payment of from $75 to $250 per mile. Some of them have been given back to the counties without any consideration whatever. In 1899 Shelby County was reported as having bought up 117 miles of turnpikes at a cost of about $16,000, and the roads were made free from January 1, 1900. Fully nine-tenths of Kentucky highways are still worked on the old-fashioned plan of forced labor. Each man living on the farm, who is between the age of 18 and 50, is compelled to work on the road or pay someone else to do so. This frequently results in the cheapest kind of labor being sent as substitutes. In Virginia a similar condition has existed. In Tennessee the adoption of a new road law, which went into effect January 1, 1900, provided for the election of one road commissioner from each county, who is to have charge and oversight of all roads and bridges in the county. All highways are to be worked by contract, sealed proposals for which are to be submitted annually at a given date. Provision is made for proper engineering in location and grading. Bradley County has under that act borrowed money for the purpose of building new stone roads, and it is estimated that 100 miles of stone and gravel roads were built in this county alone under the new law during the first year of its operation.

One of the encouraging features in this connection is the extensive use of road-building machinery, such as rock crushers, steam rollers, plows, etc. A plant of this character may be bought for from $5,000 to $6,000, and be moved from place to place as needed to carry on the construction work.

Another improvement has been made by the use of crude petroleum in covering the surfaces of common earth roads. The theory is that if the moisture can be prevented from penetrating, these roads will remain solid through the greater part of the year. Such has been found to be the case in California. The practice, however, seems to be still in the experimental stage.

NATIONAL AND STATE ACTION.

The establishment of the office of Public Road Inquiries under the Department of Agriculture marks the advent of the Federal Government into the development of highways. The earlier national highways, such as the Cumberland road, belong to an entirely different

part of our national policy on the road question. These national roads had a military necessity, which has long since been set aside by the development of railroads. The purpose of the public roads office is to disseminate information, to make investigations, and to carry on experiments regarding road materials and construction. Numerous bulletins well illustrated have been published for these purposes. The exhibition of methods and results under the same office at various expositions throughout the country has helped to popularize road improvement. More than half of the States are administering their roads under new and progressive road laws. The tendency of such legislation has been toward a stricter supervision and enforcement of the earlier systems, a more liberal use of public funds, the substitution of a money tax for labor, the adjustment of assessments to the degree of benefits, the empowering of townships, counties, and districts to issue bonds, and regulations encouraging the use of wide tires.

The New Jersey law, which is one of the best, was passed in 1891. It provides that on petition of the owners of two-thirds of the lands bordering on a public road not less than a mile in length, asking that the road be improved and agreeing to pay 10 per cent of the cost, the county officials shall improve the road. One-third of the expense is borne by the State. The law makes possible the expenditure of $450,000 a year. Ten miles were built in 1892, 25 miles in 1893, and 20 miles in 1894. The roads cost at first about $6,000 per mile, but on account of the reduction in price of materials and the increase of labor-saving machinery, the cost has been reduced to about $3,000 per mile. For the last five or six years the applications for new roads have been far in excess of the limit prescribed by the law. The same may be said of the attitude of the public in Massachusetts under the laws of that State. For the more densely populated portions of the country there is no doubt that under this system a fairly satisfactory solution of the road problem has been reached.[1]

ELECTRIC RAILWAYS.

A step in the direction of quick and cheap transportation facilities between the large cities and the adjacent country districts has at last been effected by the trolley lines. In the case of those running into Cleveland the intermunicipal railway movement has developed a quantity of farm freight available for the city market which has apparently surprised those who were not anticipating the possibilities of using trolley roads for marketing the products of the farm. The milk trade at Cleveland has been brought under this influence in a marked degree. Few other cities in the country have such a reach of trolley

[1] Year Book of the Department of Agriculture, 1899, pp. 367–380, 749–750.

roads as Cleveland has. Already seven of these roads reach out into the country, east, west, and south, distances of 50 to 60 miles, and all but one run through dairy districts, one into the heart of a section which has never had public communication with the town; another reaches the famous Wellington district.

These roads were quick to see the possibilities of the milk trade and speedy and unsurpassed delivery to dealers or peddlers. Milk cars are run over these lines morning and night, and at rates somewhat below the steam roads' tariff, actually passing the farmers' barns. The amount of milk they deliver (September, 1901) is fully one-half of the city supply. As the street lines and country trolleys are owned by one company, milk cars are run anywhere in the city that the consignor of the milk demands, and the smaller buyers stop a car anywhere and take off their cans. This avoids, in two-thirds of the cases, any use for a milk depot other than the distributing car. Incidentally, these same lines are running package freight cars. The amount of farm produce that they transport in basket, box, and barrel is astonishing, and the return package freight is quite as large.

At York, Pa., where the owners of the city electric lines have made extensions through the country to towns and villages several miles distant, a similar growth of rural traffic has taken place.

The opening of the electric railway from Benton Harbor on the southeastern shore of Lake Michigan to Grand Rapids, Mich., promises to add another line of this kind to the marketing of farm produce. This line bisects the richest fruit country of western Michigan, and by boat connects Chicago and Milwaukee with the fruit territory, which has expanded far beyond the limits of existing railroads. At the present stage of railroad building, increased mileage consists of the extension, very largely, of branches and spurs from already established lines. This does not always succeed in reaching farm communities which have developed without special regard to the nearness or remoteness of railroad facilities. If this conservatism on the part of steam railroad interests and promoters is continued, as it very likely will be, the electric railway will be called into use more generally to meet the needs of lighter traffic for farming districts, very much as the light railways of England have been developing there.

COST OF DISTRIBUTION.

Between 1885 and 1900 the commercial expenses involved in concentrating grain at Chicago, not including freight charges, but including elevator charges at both ends and commission for selling at Chicago on consignment, decreased from a range of 3⅛ to 10¾ cents a bushel in 1885 to a range of 2¼ to 3¾ cents in 1900.

The cost of handling at the local elevator is 2 cents a bushel. Through rates to the seaboard or for export on corn are much lower than the sum of the local rates, thus making it cheaper for the through shipper to handle the grain from the local elevator through to destination than for the local shipper to send it to a primary market on consignment.

Statistical calculations show (1) that the combined distributive expenses of handling corn from Kansas to Chicago, where the bulk of the corn from trans-Mississippi points is marketed, is equal to one-third of the value of the corn to the consumer at Chicago, the producer getting two-thirds of the Chicago value; (2) that the distributive expenses for handling from Illinois points to Chicago amount, on the average, to one-fifth of the Chicago value, the Illinois producer getting the other four-fifths.

The cost of distribution has been reduced chiefly by economies of such nature as the consolidation of receiving and shipping agencies at primary markets, by the enlarged scale of handling at terminal elevators, and by through rates on shipments.

The controlling features in the grain trade of the West are (1) consolidation of agencies in the constitution of primary markets; (2) competition among primary markets; (3) cooperation of railroads with line elevator companies in control of terminal warehouses to command traffic for the business of the road and grain for warehouse storage; (4) the differentiation of grain buying between independent dealers and line companies; (5) the combination of local grain dealers.

XI. PROBLEMS OF GRAIN AND COTTON MARKETING.

THE EVOLUTION OF PUBLIC WAREHOUSES.

The terminal elevator system in the handling of grain begins with the prominence of Chicago as a primary grain market. This point has always been the principal terminus in the receipt of Western grain and in its distribution eastward. The terminal warehouses grew out of the necessity of storing the grain from the time it was harvested, or shortly thereafter, to the time when it was required for consumption. The producing districts being generally without adequate storing facilities, the central markets accumulated vast supplies, provision for which was made in the warehouses known as elevators. From 1871 up to 1887 these elevators were handled in such a manner as to be more or less satisfactory to all concerned. They were then regarded as terminal freight stations, and were under independent management. That is, they were operated by persons engaged in no other business.

A new factor in the situation began to appear about 1885, when the warehousemen of Chicago commenced to deal in grain, thereby entering into competition with buyers throughout the grain territory. This practice grew so rapidly that within fifteen years grain-buying warehousemen absorbed three-fourths of the business of both buying and selling grain at the Chicago market. During the first three or four years following the enactment of the interstate-commerce law the elevators ceased to be open on equal terms to the public, and passed into the hands of people who did a combined grain buying and warehousing business.

This combination of pursuits made its representatives much more important in the control of the grain movement than any grain buyer could be who was not in control of warehousing facilities. The railroads in their competition for grain traffic found the warehousing grain buyer to be most helpful, particularly because of his having established a line of country elevators throughout the territory traversed by the railroad, and because he was in a position to receive the grain at terminal stations and store it promptly or forward it eastward. This had the effect of reducing the cost of transferring grain at Chicago for eastern destinations.

Through rates for shipment to the East and to Europe enabled the large grain dealers in control of warehouses to take advantage of a lower rate than was open to those who were simply receiving-merchants at Chicago. This difference between the through and the local rate is in normal times from 2 to 3 cents a bushel on corn in favor of the through shipment. The line-elevator buyer can afford to pay the farmer so much more.

Under such conditions as these the terminal elevator system of warehousing grain has become a central feature of the primary grain markets, which are in more or less complete control of about half a dozen grain firms. This outcome has been mainly due to competition among primary markets, to the necessity of reducing the cost of distribution per unit at Chicago, and to the difficulty of railroads getting what they regarded as their share of the grain traffic without cooperating with the leading representatives of the grain trade.

ELEVATOR MONOPOLIES.

It is frequently alleged that the prices at which farmers have to part with their crops is determined by the combination of buyers in terminal markets; for example, that the card prices paid for wheat in South Dakota are fixed by three or four men on the Minneapolis Board of Trade. If this is the case, there does not seem to be much room for competition among buyers, especially if these three or four buyers are ready to take the bulk of the crop as it comes to the market. A further factor in the control of prices is the existence of the local

elevators under the control of these three or four terminal buyers. On the part of the buyers themselves and the trade generally it is denied that any combination on their part really exists. The value of this denial may be inferred from the violent opposition which these terminal grain interests manifest when the local farmers' associations propose to erect local elevators at points on railroads where these leading buyers alone are represented by their own elevators. Where elevators have been erected and operated as independent elevators, a price of from 1 to 3 cents more has been paid than at points where no independent elevators were in operation. In a large number of cases the opposition has taken the form of paying a price high enough to drive the independent elevator out of business. Under such circumstances the line elevator interests simply reveal what they constantly deny, viz, that there is enough of a monopoly in controlling the purchases to lose a good deal of money in driving out any attempt at competition. There is no fact which is inferentially so clear and yet so difficult to prove in courts of law as this, that line elevator companies succeed, in the absence of independent elevators, in maintaining a monopoly on the basis of common interests among themselves.

There are limits to the extent to which the common interests of a group of grain buyers in any particular commercial territory can go in the enjoyment of their more or less substantial monopoly. Minneapolis buyers, for instance, may force down prices at points where there are no independent elevators, for a while at least, without attracting the attention of other grain markets to the lower level of prices. Such a state of things is favored by the fact that the grain movement is organized for shipping to a given market within naturally tributary territory. It is furthermore true that there may not be much competition between Chicago and Minneapolis for Northwestern wheat when the same group of buyers are the largest purchasers in both of these markets. Nevertheless, such a condition would sooner or later work its own destruction by bringing into this territory grain buyers either from the Southwest or from the far Northwest. There are usually enough buyers in the market to take advantage of prices that in any given territory are out of line with the prevailing level at the great terminal markets. Only, therefore, where the central market has a more or less privileged position by reason of its centralized railroad agencies and well-organized system of handling grain rapidly, as compared with buyers not so favorably situated, can a combination of buyers operate for any length of time in such a way as to buy continuously below the prevailing prices. The competition of terminal markets sooner or later puts definite limits to the advantages arising from combination of buyers; but where the same group of interests operates in all the leading markets, it would seem economically possible to keep prices down throughout the greater part of the territory and

for the major portion of the season during which the crop is usually sold. In order that this might be done, abundant capital would have to be available for handling the crop quickly, and the operators of such a combination would have to be given first call on the supply of railroad cars for handling a crop. That such relations have actually been in existence throughout the corn and wheat belts of the West can not be successfully denied.[1]

At many points in the grain territory of the West the railroads intersect one another to such an extent as to afford the farmer a choice of routes, but not always competitive advantages, in shipping grain. As a rule, the farmer sells to the local buyer, or to a line elevator at his nearest railroad station. The railroads have to deal directly with the local grain buyer or the line elevator owners. As a matter of fact the line elevators are in a position of advantage in their relation to the railroads. The railroads depend upon them more than upon any other commercial agency for securing the grain traffic of their railroads. It is not to be supposed that for want of paying a few cents per bushel by way of a rebate in freight any particular road whose dividends are dependent upon this grain traffic would hesitate to compensate line elevators to that extent for such service.

The relative importance of the line elevators and local dealers' elevators, on the leading grain lines of the West, may be gathered from the figures showing the ownership of grain elevators on the Northern Pacific Railway. At 331 stations there are 743 elevators, of which the line elevator companies control 430, or 57.9 per cent; the local dealers control 286, or 38.5 per cent; and the farmers' associations, 27 elevators, or 3.6 per cent of the whole number.[2] The almost unanimous testimony of the railroads themselves is that they encourage the erection of an adequate number of elevators in grain-producing territory to enable them to handle this traffic, regardless of whether the elevator is operated by local dealers, line companies, or independent management.[3] Formerly the majority of buyers in the country shipped to commission houses at the central market, but latterly this practice has been abandoned, until fully 80 per cent of the grain that now moves to the interior markets is bought by the large grain concerns.

The local grain dealers in the West have for some time been looked upon as trenching upon the limits of legalized association, if not actually transgressing the antitrust law. On October 4, 1901, the secretary of the Kansas Grain Dealers' Association was convicted of violating the Kansas antitrust law, fined $500, and sentenced to three months in jail. He was charged with entering into combination with the grain dealers to pool and fix prices, divide the earnings, and prevent competition among grain buyers. Under this system it was charged that

[1] Reports Industrial Commission, Vol. VI, p. 52.

[2] Reports Industrial Commission, Vol. VI, p. 55.

[3] Reports Industrial Commission, Vol. VI, pp. 50–54.

the associated dealers of Kansas had almost absolutely controlled the grain business of that State for two years. It appears that all the grain buyers at a given point who went into the scheme which the associated dealers organized were to get an equal division of the grain purchased. They were to buy on a 3-cent margin, each firm putting up a hundred-dollar forfeit to the State Grain Dealers' Association in order to guarantee adherence to the plan. A report of the week's business was sent to the secretary of the association every Saturday night. Farmers and elevator companies have been organized at many points to buy and ship grain independently of the association's plan, but have rarely been successful.

It would seem from the meager facts presented in this statement that the Grain Dealers' Association had succeeded in reaching a very high degree of combination, with the effect of virtually making it impossible for farmers and independent buyers to compete at points where the combination had completed its organization.

In North Dakota and South Dakota, as well as in Wisconsin and Minnesota, farmers have been organizing into grain growers' associations in order to combat the alleged monopolistic influence of the line elevators. It is the policy of these associations to induce the farmers to ship their own grain in car lots direct to terminal points, and to grow better grades. By this means it is held that prices can be raised from 2 to 5 cents a bushel higher than is obtained at local stations where the line elevators have a monopoly of the grain business.

There are indications elsewhere that the grain trade is being brought under the control of the State powers. Attorney-General Douglas, as recently as August, 1901, wrote an opinion for the Minnesota Railroad and Warehouse Commission which, if followed, will work a radical change in the relation to the law of those elevators which have hitherto been considered as private. He declares that all elevators adjacent to railroad lines are public elevators within the law, whether on spur tracks, on sidings, or only adjacent to the line of railroad. There are about 100 of these elevators in the State, and they have never been licensed or regulated by the State in any way. They have been classed as private elevators.

INSPECTION OF GRAIN.

Practically all of the grain arriving at the large markets of the interior passes through some system of inspection. The inspection officers are, as a rule, selected on the ground of their experience and knowledge of the qualities of grain. They usually have an adequate force of assistants who are on hand to meet the incoming trains loaded with the different kinds of grain. Two systems of inspection are in

force, one of which derives its authority from the State, the other of which is provided for by the local boards of trade.

The grain inspection department of Illinois does not consider it essential to ascertain, when a sample is submitted for inspection, what part of the country or what particular State it comes from. The fact brought out here is that it is after all milling quality which determines the value of wheat, and not locality, except so far as locality may have contributed to the flour value of the wheat. In the manufacture of standard brands of flour, tastes change, so that the demands of the baking industry vary considerably from time to time. In meeting these demands, both of the bread consumer and of the baking business, it is necessary to mix different qualities of wheat in order to produce a brand of flour which will meet the varying demands of the consuming market. One of the real motives for mixing wheat, therefore, is found in the demands of the baker and the bread consumer.

The farther the wheat gets away from the farmer's hands, the more apt it is to be mixed. The value, therefore, of any particular locality's wheat is determined by its mixing value for milling purposes. A comparatively small proportion of the wheat ground into flour escapes the art of the mixer. Consequently the demand for a law which would prevent the mixing of grain would seem to be based on the assumption that the producer still has an interest in it after it has entered the channels of trade. Such appears, however, not to be the case, and any such law passed, presumably in the interest of the producer, would probably only add to the expense of distribution and throw the burden ultimately upon the consumer.

Attempts to prevent mixing have therefore ignored the essential element in the value of wheat, namely, its milling quality. Demands are still heard for a law prohibiting mixing in elevators. In 1889 the legislature of Missouri passed an act of such a character. It had the effect of driving the elevator business out of Kansas City, Mo., into Kansas City, Kans., where a more liberal inspection law was passed.[1] Only a national law could reach all markets alike.

The grain trade, as represented by local dealers throughout the central West, is giving increasing attention to methods of settling disputes and of determining market standards, including such subjects as uniform grades and weights. The National Grain Dealers' Association, at Des Moines, Iowa (October, 1901), gave especial attention to the formation of a committee on arbitration. The scheme drafted for discussion provides that local committees should act as courts of first resort, the national committee's decision should be final and its jurisdiction should cover all matters national, interstate, and interlocal pertaining to the grain business wherein any member of the

[1] Trade and Commerce of Kansas City, Mo., 1891, p. 25.

national association or affiliated associations had personal interest. The board of arbitration should be constituted of three persons, one prominent receiver or buyer of grain, located at some central or terminal market, one representative country shipper, and one not entirely identified with either of the above divisions of the grain trade, and all to be selected with consideration of geographical and business conditions.

Likewise, in the growth of the present system of handling grain, organizations of growers have done a great deal to perfect the methods. The National Grain Growers' Association has since its organization in 1896 increased its membership to 2,000 and an associate membership to 1,645 persons, making in all 3,645 members. These representatives in their annual conventions discuss problems and arrive at decisions upon interstate trade, arbitration, boards of appeal, common carriers, State and national laws, terminals, central markets, trade rules and customs, grain inspection, car inspection, and the weighing of grain. It would seem that out of such conditions a national system of grading and inspection might be constructed.

GRADING OF GRAIN FOR EXPORT.

The grades for grain at the different markets, both in the interior and at the seaboard, are usually established by the grain committee of some commercial organization, said rules for grading being subject to the approval of the body to which the committee is responsible.

The rules for grading at these different places appear to agree quite closely in the standards which they set. In practice, however, there are different degrees of strictness. Some boards of trade and chambers of commerce require their inspectors to live up squarely to the rules, and others seem to allow considerable latitude. It seems to be a general rule that the grades of local primary markets which receive at first hand grain from territories contiguous thereto are accepted by other markets as standard. For instance, the trade at Cincinnati accepts the Minneapolis and the Milwaukee grades in the purchase of wheat in those markets. To some extent the interior grades are accepted at the seaboard markets.

At the leading Atlantic and Gulf ports, while there is no formal agreement among the inspecting officials of the different ports on the subject of uniformity of grade, it is a fact that the inspection authorities keep more or less in touch with one another, and are cognizant in a general way of the nature of the work performed at all the other ports. The secretary of the Boston Chamber of Commerce says:

"This is due in part to their own efforts to inform themselves of the work done by others, and in part to the fact that each shipper of

grain from the West for export makes use of all the Atlantic ports, and any variation in the standards of inspection at the different ports would be brought into immediate notice."

Owing to these conditions, namely, substantial uniformity in the rules of inspection and the commercial necessity of any particular port keeping its standard up to those observed by other ports, there seems to be now in existence a pratically uniform standard for the exporting grades of cereals at all ports having an official inspector. A further step in the direction of more complete uniformity has been taken in the recent organization of an association of the chief inspectors of the different grain-handling centers of the United States.

An analysis of the rules governing the inspection of grain at several of the leading markets shows that the following eight characteristics are taken into account in the classification and gradation of cereals: (1) Locality of production, (2) season of sowing, (3) weight, (4) color, (5) cleanliness, (6) purity, (7) dryness, (8) soundness.

It is evident that while in practice uniformity of standard grades already prevails within certain limits it is equally true, as the president of the New Orleans Board of Trade remarks, "that the difficulty in the way of fixing and enforcing a uniform standard of export grades is due to the difference in the character of the grain raised in the territories contiguous to the various ports of shipment, which makes quite a difference in the value of grain technically of the same grade. At the present time (November 20, 1901) new crop wheat from New Orleans will bring better prices than wheat from most any other port in the country."

Any effort to put into legal enactment the requirements of an export standard grade of grain would have to proceed on the basis of this inevitable influence of producing locality upon commercial quality. Allowing for this, there does not appear to be any good reason why each important kind of grain might not be defined for export purposes by weight per bushel and by characteristics of quality, such as soundness, dryness, cleanliness, and purity.

MARKETING OF COTTON.

The scarcity of money and the consequent indebtedness of farmers for supplies, stock, machinery, etc., have made it necessary to sell the greater proportion of the cotton crop at a lower price than prevails later in the season. For a long time this has been the chronic condition of the cotton grower. Numerous proposals have been made for the purpose of obviating this necessity. Underneath all of them lies the fundamental idea of obtaining advances for cotton without losing control of it. The subtreasury idea, which was much discussed ten years ago, has not been recently revived. A later plan is that of erecting storage warehouses at such large interior centers as Memphis and

Houston, where low rates of insurance might be obtained and companies organized to advance a certain percentage of the value of the cotton, or a definite amount of money on each bale, so that the grower might be enabled to meet his more pressing obligations without having to throw a large proportion of his crop on the market during the fall months. This plan seems to have excellent possibilities in it, and with the cooperation of fair-dealing capitalists might go very far toward improving the financial position of farmers who could avail themselves of it. By so doing, trade localities would greatly increase the purchasing power of the farmer and thereby add to the general prosperity.

The Texas Cotton Growers' Association has announced a plan by which Galveston bankers will advance to planters $30 a bale on their cotton. A central association at the port of Galveston receives the cotton, to which it is consigned from the shipper in the interior. The advances are available as soon as the shipment is made, and they bear an interest rate of 6 per cent. This plan is accompanied by another feature, which is advisory, namely, that farmers shall not dispose of more than 10 per cent of their cotton per month until prices have advanced. Similar arrangements for advancing funds are made with banks at Houston, Dallas, and Corsicana. This attempt is not to be looked upon as an imaginary scheme, so many of which have failed in the past, but rather as an attempt on the part of banking institutions to remedy in some measure the fatal inadequacy of rural funds, the absence of which is the curse of farming everywhere, until remedied by banking institutions adapted to the needs of the farming community, such as prevail now in the central West.

SPECULATION IN AGRICULTURAL PRODUCTS.

It has frequently been urged that there should be remedial legislation in order to protect the producer from the speculator. Dealings in "futures" have at different periods since the rise of produce, grain, and cotton exchanges in the United States been looked upon as one of the chief factors governing the prices of farm products. That is, speculative agreements as to future values have been regarded as causing a rise or fall in the prices of agricultural products.

This earlier view of speculative trading has been considerably modified by a more complete insight into the relation which speculation bears to commercial methods. It is now more generally held that speculation in its legitimate and normal function is primarily occupied in anticipating the price at which under all circumstances the producers' supply is likely to yield to the consumers' demand. The adjustment between these two factors—supply and demand—is all the more delicate because with each recurring year they exhibit more or less elasticity. The positions of producers and of consumers change.

The commercial judgment must be recast each successive season and at all stages of the season. This task must be classed among the really valuable services of speculation in distribution.

The three great functions which speculation performs in a free system of trading are, first, to localize the risks of distribution among a special class of experts presumably well informed as to the facts of supply, demand, credit, exchange, and cost of distribution. Second, to relieve producers and consumers alike of the expense and risk of being responsible for a year's production, thus freeing the cash income of both of these economic interests for other uses than those of protecting and providing a long-term supply of utilities. Third, to reduce the profits of trade by ready and active competition among the various speculative interests toward a minimum of cost per unit of commodity handled, by conducting distributive operations on a large scale.

Throughout the East and the West it appears to be the general practice of millers on a large scale, who make contracts for delivering flour in the future, to purchase in the market for "futures" a corresponding quantity of wheat against the contract for the delivery of flour which they have assumed. This system, as stated by entirely trustworthy representatives of the trade, has been found absolutely necessary in order to prevent the miller from assuming the extraordinary risks of changes in the market value of wheat. Only the more speculative and daring millers would undertake to fulfill future contracts without exercising this precaution of purchasing wheat "futures." In considering the question of whether buying and selling of "futures" is consistent with the welfare of the producer, this aspect of the practice must be regarded as buying and selling insurance against loss.

The economic position of warehousemen in handling agricultural products under the present system is somewhat similar to that of the miller. The warehouseman with a million bushels of grain in storage is obliged in some way to secure himself against loss from fall in cash prices in the future by selling "futures" at a price which will cover his outlay. He thus absolutely eliminates that million bushels of grain from the class of risks which the business has to run.

A common evil of the grain, cotton, and provision trades is overspeculation. Overspeculation is a result of the attempt to do too large a volume of business on a given amount of cash capital. The amount of cash capital which a trader can command depends very generally on the amount of credit which his bankers are willing to give him. It is therefore largely in the power of these trustees of the community's cash capital to check or favor overspeculation. Any laws that will fix and enforce upon banking institutions the responsibility for extrahazardous uses of funds intrusted to them, whether by their customers or the officers of banks, will go far toward checking overspeculation.

XII. HOME AND FOREIGN MARKETS.

IMPORTANCE OF THE HOME MARKET.

The products of agriculture comprised 64.64 per cent of the value of our domestic exports in the fiscal year ending June 30, 1901. In spite of this extraordinary preponderance, only a comparatively minor proportion of our farm products ever passes out of the home market. The disposition of the corn crop of the United States from year to year illustrates the relative importance of the home market as compared with the foreign market. Only one-fourth of the commercial corn crop ever leaves the county in which it is grown—that is, the corn crop is the feed basis of the great majority of American farms. About one-fifth of the corn crop enters into the internal commerce of the country; that is—it passes out of the county in which it was grown and is distributed between the farm and the numerous consuming centers throughout the country. From 5 to 10 per cent enters into foreign trade. Compared with the organization of the farm in foreign countries, with regard to the supply of feed for the maintenance of live stock, the American farm occupies a unique position of unusual strength.[1]

The wheat crop gives further illustration of the demands of the home market and foreign markets. Between 40 and 50 per cent of the wheat is consumed in the county where grown. The exports of wheat and of wheat flour reduced to an equivalent in bushels ranged from 27.6 per cent in 1895 to 40.8 per cent in 1897.[2] It is fairly accurate to say that 30 per cent of the crop, or less than one-third, is regularly exported; the other 60 per cent being required for domestic use.

As a rule, more than 70 per cent of the oats crop is consumed within the county where grown. The remainder passes into trade, 4.6 per cent of which was exported in the year ending June 30, 1901, leaving 26.4 per cent to supply the domestic demands outside of the producing counties.

From this it is clear that the three great staples taken as a whole are mostly consumed at home. The development of domestic demands likewise appears to be increasing. It is not too much to anticipate a time in the future when the foreign consumers may have to rely less on the American surplus, and our own needs take a still larger share of the annual production. A comparison of the value of agricultural exports with the value of total exports brings out two facts: First, that

[1] Reports Industrial Commission, Vol. VI, p. 44.
[2] Reports Industrial Commission, Vol. VI, p. 40.

the percentage of agricultural values compared with the total is decreasing; second, that the total values of agricultural exports taken alone have been increasing, especially if we compare the average of agricultural exports for the ten years since 1891 with the average for the ten years preceding 1891.

Comparison of agricultural and total exports since 1860.

Fiscal years.	Value of total exports.[1]	Value of agricultural exports.[2]	Per cent of agricultural.[3]
1860	$333,576,057	$256,560,972	76.91
1870	392,771,768	361,188,483	91.96
1875	513,442,711	430,306,580	83.81
1876	540,384,671	456,113,515	84.40
1877	602,475,220	459,734,148	76.31
1878	694,865,766	536,192,873	77.16
1879	710,439,441	546,476,703	76.92
1880	835,638,658	685,961,091	82.09
1881	902,377,346	730,394,943	80.94
1882	750,542,257	552,219,819	73.58
1883	823,839,402	619,269,449	75.17
1884	740,513,609	536,315,318	72.42
1885	742,189,755	530,172,966	71.43
1886	679,524,830	484,954,595	71.37
1887	716,183,211	523,073,798	78.04
1888	695,964,507	500,840,086	71.96
1889	742,401,375	532,141,490	71.68
1890	857,828,684	629,820,808	73.42
1891	884,480,810	642,751,344	72.67
1892	1,080,278,148	799,328,232	77.58
1893	847,665,194	615,382,986	72.60
1894	892,140,572	628,363,038	70.43
1895	807,538,165	553,210,026	68.50
1896	882,606,938	569,879,297	64.57
1897	1,050,993,556	683,471,139	65.03
1898	1,231,482,330	858,683,570	69.32
1899	1,227,023,302	784,776,142	63.96
1900	1,394,483,082	835,858,123	59.94
1901	1,487,765,557	944,059,568	64.64

[1] Foreign and domestic. [2] Domestic only. [3] On basis of foreign and domestic exports.

EXPORTS AND IMPORTS.

In the fiscal year 1900 the products of agriculture were exported to the value of $835,858,123, forming 59.94 per cent of the total domestic exports. For the twelve months ending June 30, 1901, the total domestic exports were $1,460,453,809, of which $944,059,568 were the domestic products of agriculture, making altogether 64.64 per cent of the total domestic exports.

The relation of imports and exports of products of agriculture and the excess of agricultural exports over agricultural imports during each fiscal year from 1891 to 1900, inclusive, will be seen from the statistics furnished by the Bureau of Statistics, Treasury Department, in the following table, which exhibits on the whole an increase of the excess of exports, though not without fluctuations from year to year:

Value of imports and domestic exports of the United States, total and agricultural, and excess of agricultural exports over agricultural imports, during each fiscal year from 1891 to 1900, inclusive.

Years ended June 30—	Imports.			Domestic exports.			Excess of agricultural exports over agricultural imports.
	Total.	Agricultural.	Per cent agricultural.	Total.	Agricultural.	Per cent agricultural.	
1891	$844,916,196	$420,211,949	49.73	$872,270,283	$642,751,344	73.69	$222,539,395
1892	827,402,462	436,697,057	52.78	1,015,732,011	799,328,232	78.69	362,631,175
1893	866,400,922	425,657,448	49.13	831,030,785	615,382,966	74.05	189,725,538
1894	654,994,622	365,160,319	55.75	869,204,937	628,363,038	72.28	263,202,717
1895	731,969,965	373,115,985	50.97	798,392,599	553,210,026	69.73	180,094,041
Annual average, 1891–1895	785,136,833	404,168,551	51.48	876,326,123	647,807,125	73.69	243,638,574
1896	779,724,674	391,029,407	50.15	963,200,487	569,879,297	66.02	178,849,890
1897	764,730,412	400,871,468	52.42	1,082,007,603	683,471,139	66.23	282,599,671
1898	616,049,654	314,291,796	51.02	1,210,291,913	853,683,570	70.54	539,391,777
1899	697,148,489	355,514,881	51.00	1,208,981,222	784,776,142	65.19	429,261,261
1900	849,941,184	420,139,288	49.43	1,370,763,571	835,858,123	60.98	415,718,835
Annual average, 1896–1900	741,518,883	376,369,368	50.76	1,166,088,959	745,533,654	65.79	369,164,296

The imports consist of 12 leading classes, which, altogether, comprise about 90 per cent of the entire import in the products of foreign agriculture. These details are based on the figures of the fiscal year ending 1900. During that year sugar, which is the main class, was imported to the value of $100,250,974, at an average price of from 2.4 to 2.5 cents per pound.

Next in importance are hides and skins, valued at $57,935,698; the average yearly import price per pound being 16.7 cents.

The imports of coffee for this year were 787,991,911 pounds, valued at $52,467,943, or 6.7 cents per pound.

Silk was imported to the value of $45,329,760, an average of $3.47 per pound.

Vegetable fibers during this fiscal year were received to the amount of $34,334,750, consisting mainly of sisal grass, cotton, and manila hemp.

Wool was received to the amount of 155,928,455 pounds, valued at $20,260,936, the average import price per pound being 13 cents.

Fruits and nuts were imported, valued at $19,263,592, which includes bananas and lemons.

Imports of tobacco amounted to 19,619,627 pounds, valued at $13,297,223, the average price per pound being 67.8 cents.

The imports of tea were valued at $10,558,110, the annual average import price being 12.4 cents per pound.

Wines were imported to the value of $7,421,495.

Vegetable oils worth $6,320,711, and cocoa worth $5,970,844, were imported.

Of these articles, sugar, coffee, vegetable fibers, and tobacco are peculiar to the tropical possessions recently acquired by the United States. These possessions are furnishing markets for our farm products, such as flour and provisions, on the sale of which in exchange for the tropical products the prosperous relation between the United States and these islands will depend. Less and less, therefore, should this country derive from outside sources such tropical commodities as sugar, hemp, and tobacco, and more and more should these islands constitute openings for the sale of our surplus agricultural products, if the policy best calculated to bind our tropical possessions to the United States is that of mutually advantageous trade relations.

An official table explaining existing trade relations of these possessions follows:

Commerce, area, and population of Porto Rico, Cuba, Hawaii, the Philippines, and Guam.

[From Monthly Summary of Commerce and Finance.]

Countries.	Commerce.							
	Year.	Imports into.			Exports from.			
		Total.	From United States.	Per cent of United States.	Total.	To United States.	Per cent of United States.	
Porto Rico	1900	$10,506,169	$5,428,038	51.67	$6,639,831	$3,009,823	45.33	
Cuba	1900	71,681,187	30,107,110	42.00	45,228,346	34,621,879	76.55	
Hawaii	1899	19,059,606	15,020,830	78.81	22,628,742	22,517,759	99.51	
The Philippines	1900	20,597,167	1,656,469	8.04	19,751,068	3,522,160	17.83	
Guam								

Countries.	Commerce. Imports and exports.			Population.[1]		Area.[1]
	Total.	Part of United States.	Per cent of United States.	Year.	Number.	Square miles.
Porto Rico	$17,146,000	$8,437,861	49.21	1899	953,243	3,606
Cuba	116,909,533	64,728,989	55.37	1899	1,572,797	46,575
Hawaii	41,688,348	37,538,589	90.05	1900	154,001	6,449
The Philippines	40,348,235	5,178,629	12.84	1899	8,000,000	119,542
Guam					[2] 9,000	[2] 150

[1] From United States reports. [2] Estimated.

POSSIBLE EXTENSION OF FOREIGN MARKETS.

When it comes to such a market as Cuba, it would seem advantageous for the United States to give that island a slight differential duty on its staples to serve the purpose of a premium on the development of trade relations with the United States. This country is the natural source from which food supplies are drawn for the needs of the Cuban consumer. The reciprocity treaty in force between Spain and the United States for Cuba and Porto Rico was signed July 31, 1891, and demonstrated the influence of such an arrangement in stimulating

our exports to Cuba. No further proof of the advantage of such relation need be required, and agriculture in the United States has as much to gain as any other economic interest from a resumption of reciprocal trade relations with Cuba.

As to other countries, our best foreign markets for the products of agriculture are still European. With the progress of consumption of articles of a tropical origin our foreign trade with tropical countries is sure to increase. The most promising outlook is now in the Asiatic trade. South America is in some respects a competitor. Canada is applying the American policy of progress by protection, also by the use of bounties and by liberal encouragement in putting farm products into the European markets. Nevertheless, by yielding minor advantages for the present, it would seem practicable to enlarge the opportunities for trade between Canada and the United States.

A comparison of agricultural exports shows that for the year ending June 30, 1900, there were 16 different articles whose value amounted to $10,000,000 or more each, out of a total of $844,616,530. At the head of these articles cotton stands valued at $242,988,978, followed in order by corn, wheat, wheat flour, lard, bacon, cattle, fresh beef, leaf tobacco, hams, oil cake and meal, cotton-seed oil, oats, fruits, barley, and oleo oil.

RECIPROCITY.

Reciprocity treaties between the United States and other countries, principally American, have been in existence since 1854. The treaty with Canada was in force from 1854 to 1866; that with the Hawaiian Islands from 1876 to 1898. A series of treaties was framed under the act of 1890 with Brazil, Cuba and Porto Rico, Germany, the British West Indies and British Guiana, Austria-Hungary, and several of the Central American States. These continued in existence until the passage of the Wilson tariff act, August 27, 1894.

The general terms of these treaties embraced the idea that they were to provide markets for our surplus products of agriculture and certain manufactures. Breadstuffs, provisions, live animals, fruits, and poultry were among the products for which advantages were believed to be gained by these reciprocal trade agreements. In the case of the tropics the emphasis was put upon the advantages of exporting manufactured articles, including machinery, in exchange for tropical products not produced in the United States.

Since the inauguration of the reciprocity treaties of ten years ago the surplus manufactures of the United States have become relatively much more important, and at the present time it is to furnish an outlet for this kind of exports in particular that reciprocity treaties are proposed. This change from an agricultural to a manufacturing basis of reciprocity must be kept in mind when the question is raised whether

the farming interests of the country have anything to gain by the extension of reciprocal trade relations with foreign countries. As a matter of fact, however, agricultural products are still preeminent.

It is not to be presumed that reciprocity treaties will overlook the large proportion of agricultural surplus in the exports of the United States in spite of the rapid growth of manufactures. For the fiscal year ending June 30, 1901, the products of agriculture comprised 64.64 per cent of the total exports and the manufactures 28.11 per cent. In point of value, therefore, agricultural products were more than two and one-fourth times as large as manufactures.

The advantage of reciprocity from the farmer's standpoint is quite as often indirect as direct. If treaties could be made by which the meat products or provisions of the United States could be exchanged for certain foreign manufactures which partake of the character of luxuries, perhaps no serious objection would be raised on the part of American manufacturers, and the market for American farm products would be widened by such an arrangement. This, however, could apply only to the continent of Europe, where manufacturing is specialized in such directions. For the tropics the same indirect benefits would be obtainable through the free admission of flour and provisions in exchange for commodities peculiar to tropical climates, such as coffee, fruits, etc. It must not be forgotten that the rise in the price of farm products which has been going on in this country for some months may materially check exports in certain articles, which, under a much lower price, might figure much more largely in exchange relations such as reciprocity contemplates. Whether, therefore, reciprocity turns out to be advantageous or disadvantageous to agriculture depends very much on how it is affected by the level of prices at home; for it may be that the home market is so much more favorable than the foreign market as to take more and more of the surplus now sent abroad. Furthermore, it is to be kept in mind that Canada is far less favorably situated for reciprocity arrangements than ten years ago, inasmuch as her policy is to develop her manufactures just as has been the case in the United States. Likewise on the continent of Europe the disposition of France and Germany is to raise the grain duties and thus stimulate the increased production of cereals and cut off the market of the United States.

The best prospects for reciprocity, looking to the interests of the producers of surplus farm products, are (1) in the Tropics, and (2) in the Far East. The judgment of representatives of the farming interests in the Northwest favors the latter trade as a necessary aid to agriculture. To that end they propose a bounty on cargo tonnage of ocean-going ships.

XIII. GOVERNMENT AID AND REGULATION.

Government encourages trade and industry, among other ways, by enforcing standards of purity in products offered for sale, by preventing the spread of pests, and by aiding in affording industrial and commercial opportunities to its citizens. The fertilizer laws and the oleomargarine laws are instances of the first function, the measures adopted to prevent the spread of the Texas-fever tick an instance of the second, and the reservation of the home market for domestic wool growers a case of the third kind.

FERTILIZER CONTROL.

The methods of inspecting fertilizers vary in different States, but all systems have had to adapt themselves to the requirements of the freedom of interstate commerce. The legal ground on which the exercise of State authority over such sales is based is that of the police powers which each commonwealth is bound to exercise for the protection of its citizens. The method of procedure has been to select samples of fertilizers manufactured in or shipped into a given State and send them to the experiment stations, where analyses are made and reports given out showing the contents of the particular commercial brands. As a rule the different States have allowed for a reasonable degree of variation in the contents of these fertilizers; but it has sometimes been necessary to exclude brands from the market which have not measured up to the legal standard.

Much useful literature has been diffused among the consumers of fertilizers under the auspices of State authorities. Farmers understand better now than they ever have what the constituent elements of a good fertilizer are, and they are more familiar than ever with the market value of standard ingredients. Some States have issued official valuations of commercial fertilizers, by which it is undertaken to inform the consumer whether the price asked for a fertilizer is abnormal or not. Some departments of agriculture have year by year made computations including all the elements of cost in a fertilizer as delivered to the consumer. These elements comprise: (1) The wholesale cost of the ingredients; (2) the jobbers' profit on the sale of the ingredients, assumed to be equivalent to the retail price of single ingredients in small lots, less the wholesale cost of the ingredients; (3) expense and profit of mixing, $1 per ton; (4) expense and profit of bagging, $1 per ton; (5) agent's commission, 20 per cent of the cost of the goods f. o. b. at the jobber's or mixer's warehouse; (6) freight from the wholesale market to point of delivery. By making such

valuations from year to year it is possible to protect the consumer who lacks technical knowledge of such a commodity from being imposed upon, provided the consumer makes use of the information which the State furnishes. The requirement of the fertilizer laws of the different States, that each manufacturer shall submit a statement of the percentage of ingredients, has the effect of maintaining a standard of quality up to the legal requirement. These analyses, stamped by the manufacturers on each bag, have furthermore helped to diffuse correct ideas as to the quantity and character of the different ingredients of fertilizers.

PURE-FOOD LEGISLATION.

The pure-food legislation in which farmers are most directly interested relates principally to butter substitutes. In our foreign trade these substitutes, known as imitation butter, have had the effect of greatly damaging our sales of real butter. International competition is so active as to make it highly advisable that a reasonably rigid inspection and labeling of exports should be carried out under national control. By no other means can the prejudice against butter from the United States be overcome in such markets as London, where Denmark, Russia, Australia, Ireland, and Canada compete with us for the butter trade.

In foreign markets it is clear enough that not only our domestic producers have rights in this legislative prevention of fraud, but that the entire trade, and through it the exchange power of the nation, as a whole, is affected unfavorably by the destruction of the confidence of the foreign trade in the genuineness of our products. Against such abuses as this, a system of inspection of exports, under national control, would be worth millions of dollars per annum to the butter trade and industry alone.

The activity of the dairying interests in the different States has quite generally forced spurious substitutes, sold under the name and form of butter, to be marketed on their merits as avowed substitutes. The history of oleomargarine legislation shows that in spite of many failures to enforce these laws the trade in butter substitutes is carried on under heavy risks, owing to the liability of participants to prosecution. By act of May 15, 1899, in the State of Pennsylvania, the sale of oleomargarine or butterine is no longer prohibited, as was previously the case, but is permitted, provided it be "free from coloration or ingredients that cause it to look like butter;" but those who manufacture or sell it are required to obtain a license, pay a fee, and stamp each package with the words "oleomargarine" or "butterine," and must furthermore exhibit a sign setting forth this branch of their business in a conspicuous place on the walls of the establishment in which the

sale or manufacture is carried on. Under the new law special effort was made to inform dealers throughout the State what its provisions were. Copies of the law, license blanks, and books of record were distributed before the law was enforced to the extent of testing samples. From January 1, 1900, to December 6, 1900, 945 prosecutions were brought under this oleomargarine law. Many of them are still pending, and mainly on account of the slowness of the judicial machinery, there is still much dissatisfaction with the operation of the law. Of the total number of 1,134 cases brought by the dairy and food division of the department of agriculture for the period specified during 1900, only 126 cases had been decided at the beginning of the following year (1901), and 987 were still pending.

The bearing of this matter on agricultural prosperity is vital. It is stated officially that Pennsylvania has 1,100,000 cows, whose annual product in butter is from 90,000,000 to 100,000,000 pounds. These cows are owned by 211,412 farmers' families, consisting approximately of 1,000,000 people, or about one-fifth of the State's population. The annual income of the farming people of Pennsylvania from butter alone is estimated at between eighteen and twenty millions of dollars. It is urged on the part of the State department of agriculture that the substitution of oleomargarine under the pretense of selling it for butter would result in an immediate depreciation in the value of live stock in that Commonwealth amounting to many millions of dollars, to say nothing of the almost total loss of buildings and machinery used in the conduct of this business. It would furthermore result in throwing out of employment many thousands of men, women, and children on the farms who are now engaged in occupations suited to their strength and attainments. This in turn would lead to a social displacement by forcing a still larger portion of the rural population to betake itself to the cities, and thereby intensify the problems of urban life.

PREVENTION OF PESTS.

The frequent appearance of insect pests in different parts of the country has awakened the attention of scientific men and of farming interests alike to the need of some systematic method of immediate action before the danger to agricultural prosperity has been multiplied many fold by the spread of the pests. The proposition to turn the matter over to State agricultural authorities does not suffice; the intimate trade relations among the States makes it impossible for any single State or any group of States to act effectively of its own accord. Nothing short of Federal organization of preventive methods, in which the States act in unison, will suffice to deal with such dangers. The United States Department of Agriculture, through its Bureau of

Animal Industry, has been able to cope successfully with such dangerous pests as the Texas fever tick, in cooperation with the States, and without seriously interfering with the cattle trade. Had a similar method been pursued upon the discovery of the San José scale, millions of dollars would have been saved to the United States by keeping open the European fruit markets.

The spread of gipsy moths in Massachusetts since 1885 is another illustration of the difficulty of dealing with the problem in the absence of national action. After this pest had been in evidence for fully five years the Commonwealth of Massachusetts began a systematic extermination, and succeeded in reducing the infested area to about one-third of what it was when the extermination began. The outlay made for this purpose aggregated $1,195,000. Then, unfortunately, the impression obtained that those engaged in its extermination were disposed to prolong it unduly, and further appropriation was refused. As a result the gipsy moth has again begun to spread, and now covers some 50 miles north and east of Boston. The brown-tail moth, imported unintentionally about six years ago, has spread even more rapidly in that State. In July, 1901, it had made its way into Maine and New Hampshire.

Unless steps are taken to repress these pests, there seems to be little doubt but that they will in course of time infest the whole country. Authorities on the subject are generally agreed that they can be exterminated. Already the burden of repression seems to have exceeded what individual States are willing to bear, and it is an open question whether the Federal Government should not assume the responsibility of dealing with the existing danger. It would at least be wise to provide sufficient funds to make prompt and thorough inquiry at the first appearance of such dangers to agricultural prosperity. Early and quick action would frequently result in stamping out such perils before they had opportunity to spread. Here, as in other cases, an ounce of prevention would seem to be a better outlay than a pound of cure. It would certainly be worth much to the agricultural interests of the country to know that a wide-awake bureau was ever on the alert to come to the rescue of any locality upon which the blighting misfortune of insect pests had fallen.

RELATION OF THE TARIFF TO AGRICULTURE.

Tariffs in the United States have been agriculturally justified on the ground of their indirect influence in furnishing home markets for the products of the farm. Alexander Hamilton, while Secretary of the Treasury, in his well-known report on the encouragement of manufactures, regarded this relation as a vital feature in his memorable policy. By the creation of manufactures, he pointed out that such a

home market was created. By the diffusion of these manufactures throughout the country the consumer was brought nearer to the place of surplus production, and the necessity for distant transportation was thereby eliminated and a near-by market secured more permanently than any foreign market could be.

Another fact bearing directly on the question of the promotion of agriculture by tariffs is the fact that the level of prices for farm products is determined very largely by the price which the surplus portion of the country's product brings in the world market, where competition with all other countries is active. The retention of an increasing proportion of the farmers' surplus for domestic consumption, and the exportation of a decreasing proportion of the crop, would tend to the maintenance of a higher level of prices to the farmer under the conditions of a practically exclusive home market. It is this consideration that encourages rural enterprise to produce less of those articles, a part of which have to be sent abroad in competition with all other countries, such as grain, and more of those articles which are in increasing demand for domestic use, namely, small fruits, dairy products, poultry, eggs, etc. This implies that diversified and intensive agriculture are necessary for the improvement of farm prices, without coming into competition with foreign producers for so large a part of the surplus crop as has been the case in the past.

RECOMMENDATIONS.

Agriculture is the fundamental, if not the most important, industry of any people and should receive as much direct benefit from legislation as any other industry. Agriculturists are indirectly but nevertheless vitally interested in equitable tax laws and in legislation intended to prevent monopoly, either in manufacturing or in transportation. As consumers of manufactures and producers of farm products they are doubly affected by unequal or exorbitant freight charges. Their interests will be best conserved, therefore, by low uniform rates for the transportation of freight and by legislation which will promote fair competition in manufactures. The recommendations of the Commission on these subjects and on taxation will be found in appropriate places elsewhere in this report.

Agriculture has derived more benefit from the establishment of the Department of Agriculture and from its administrative work than from any other Federal legislation. The annual injury to fruit and grain from the ravages of insects would probably be double what it is now but for the work of the Department. The distribution of weather forecasts has been of incalculable value in aiding farmers to give timely care to crops. Its experiments in proving the adaptation of crops to climates and soils have developed agriculture into a science and thus

alike benefited the industry and the country in general. Although the work of the Department has assumed large proportions, the Commission believes that it may be advantageously extended to new subjects. We therefore recommend:

1. That the Secretary of Agriculture be given authority—

(*a*) To inspect dairy products intended for export and to certify to their grade and quality.

(*b*) To fix standard grades for cereals, based on season of growing, quality, and weight per measure, and, when intended for export, to inspect and certify the same.

(*c*) To cause stock cars and stock yards to be cleansed and disinfected whenever he considers such action necessary.

(*d*) To make adequate regulations prohibiting the shipment of uninspected or diseased meat from one State to another, or to foreign countries.

(*e*) To require and direct the proper disposition of diseased meat.

The law at present authorizes the inspection of meat intended for interstate commerce or export, but leaves the condemned meat to be disposed of locally. The proper disposition of condemned meat is quite as important as inspection.

2. That a more comprehensive penalty clause for shipping diseased meat be enacted; also, a provision by which a receiver of a railroad, as well as the "owner or manager of any railroad company," shall be held liable for violations of the law.

3. That a law be enacted to provide—

(*a*) For the inspection of nursery stock intended for interstate commerce or for export, and prohibiting the transportation of diseased, infested, or uninspected nursery stock.

(*b*) For rules and regulations to govern the importation of nursery stock and fruit, and prohibiting the importation of diseased, infested or uninspected nursery stock or fruit.

The quarantine maintained by the State of California against the importation of infested nursery stock is a good example of what should be done by the General Government. Nearly all insect pests with which farmers and fruit growers have to contend have come to us from foreign countries. Their extermination is of more than State—it is of national—concern, and Federal assistance, in such cases as the gypsy moth and the brown-tail moth in Massachusetts, should be extended.

4. That a pure-food section in the chemistry division of the Department of Agriculture be established to prevent the adulteration, false branding, and deceptive imitation of foods, beverages, candies, drugs, and condiments in the District of Columbia and the Territories, and for regulating interstate traffic therein.

When spurious or prohibited articles are found for sale the Secretary of Agriculture should cause information thereof to be communicated to the proper district attorney, whose duty should be to prosecute.

5. That adequate legislation be enacted by the several States, where needed, to control such diseases as glanders, tuberculosis, etc.

Laws and regulations in various States have accomplished much good in controlling such diseases, in the inspection of milk and meats, and in the destruction of such pests as the Texas fever tick, etc. The continuance and extension of this work is recommended; and to those States where the authorities are lax in enforcing such laws, or where such laws have not been enacted, the example of other States, where more progressive and intelligent laws are enforced, is earnestly commended.

6. That whatever changes may be made in the tariff, by reciprocity or otherwise, adequate protection to the beet-sugar industry be maintained.

The growing of beets and the production of sugar therefrom have made rapid and successful progress during the past three years. The direct benefits thus accruing to agriculture, and to labor in the way of additional employment, are only partly appreciated or understood, while the economic advantage to the nation of producing its own sugar supply, aggregating in value more than $100,000,000 annually, would be very great. It is freely predicted by students of the question that the United States will eventually make its own sugar, mainly from beets, and that the cost of production will ultimately be as low as in Europe. To destroy or to seriously check the growth of this industry by removing the tariff on sugar would be not only unfortunate, but unjust to capital already invested therein.

7. That increased appropriations be made by the Congress for building sample stretches of improved roads in various sections of the country, so as to encourage the more rapid construction of such roads at State and local expense.

The fact that the cost in the United States per ton per mile to move farm products from the farm to railroad station is approximately three times as much as in Europe, and thirty times as much as it costs to move the same products on our railroads, proves the economic desirability of improved roads in this country. The proper distribution of the cost of the construction of such roads may be affected by local conditions. The provisions of the New Jersey law seem equitable, and it is recommended (not as a model, but as a guide) to the legislatures of the various States.

8. That the system of free rural delivery be extended as recommended by the Postmaster-General in his latest annual report.

Free delivery of mail in the rural districts has proved a boon to farmers and others outside the cities and villages. Ready means of communication is an educational force which increases the intelligence of the people using it. That free rural delivery is effective in this regard, and is a privilege fully appreciated by those enjoying it, has been amply demonstrated by the increase of postal receipts wherever it has been established.

9. That the policy of setting aside forest preserves, already inaugurated, be extended, and that the three bureaus of the Government, which have charge of investigations and administrative work connected with forestry, be consolidated.

It would be too much to expect the National Government to do all needed to be done toward preserving the forests of the country. Some States have already taken steps in the same direction by establishing forest preserves and otherwise, which work should also be extended or encouraged by appropriate statutes.

ALBERT CLARKE, *Chairman.*
BOIES PENROSE.
THOMAS R. BARD.
JOHN J. GARDNER.
JOHN C. BELL.
THEOBOLD OTJEN.
WILLIAM LORIMER.
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CHARLES J. HARRIS.
JOHN L. KENNEDY.
CHARLES H. LITCHMAN.
D. A. TOMPKINS.

MINING.

I. PROGRESS AND PRESENT STATUS.

EXTENT AND CAUSES.

Owing to the past few years of prosperity throughout the United States, the general condition of mining at the present time is of exceptional promise, and the industry seems likely to expand to a degree wholly unprecedented.

The art of mining, or, better, the science of profitable mining, has been developed to a marked degree of efficiency, and under ordinary conditions the earning of profit is now more assured than ever before—in part on account of the better knowledge of ore deposition, in part on account of the high efficiency of mine management, and in part through the cheapening of mining costs by the introduction of mechanical appliances to replace costly hand labor. Steam drills in metal mines, coal-cutting machinery in bituminous coal mines, electric underground and surface haulage, gravity or mechanical conveyance of coal or ore to breaker, concentrator, or furnace—all are factors of economy, which have a value calculable in dollars and cents. With these improvements many mines of too low a grade of mineral to admit of profitable treatment heretofore are now operated on a paying basis.

The demand for all metals has increased enormously during the past century, particularly in the last quarter, and it is still on the increase. The use of iron may be taken as an index of the progress of civilization, and the production in the United States has approximately doubled every decade for the past sixty years. Gold is produced in increased quantity, and the production of silver, which increased rapidly up to 1892, is still maintained very near the topmost point. The production of copper and lead has made enormous strides, particularly in the last few decades. The production of 10,000 tons of zinc in the beginning of the century would have overstocked the markets of the world so effectually that the mines would have been shut down from overproduction, yet during 1900 the production in the United States was 123,886 short tons, and Europe smelted and refined 470,937 long tons of this metal.

One of the most pronounced indications of the great technical progress that has been made in the United States during the last century,

particularly in the latter part, is the willingness almost universally shown by managers of industrial works to discuss details of manufacture freely in the technical papers, giving to others engaged in the same trade the results of their personal experience. There are but few metallurgical works in this country which will deny entrance to a visitor. Community of ideas and methods has also been furthered by the widespread consolidations of producing interests which have been made in the past few years, and interchange of thought and observation has been stimulated by railroads, steamboats, and telegraph. These important factors of development have also determined the current of population and the drift of mining and metallurgical progress.

TOTAL PRODUCTION OF MINERALS.

The remarkable development and present activity of the mineral industry of the United States in general is most aptly shown in a comparison of the grand totals of production from year to year. The money value at the place of production is taken as the unit of measurement. This best represents the condition of the industry, which depends not only on the quantity of the various products, but upon the money value as well. A summary of the total value of the mineral products annually produced in the United States from 1880 until 1900 is given in the subjoined table, together with the gain or loss in value absolutely and in percentage compared with the year directly preceding.

TABLE 1.—*Summary of the mineral products of the United States for the years 1880 to 1900.*[1]

Year.	Total value.	Gain or loss in value from preceding year.	Percentage of increase or decrease from preceding year.
1880	$369,319,000	.....	.....
1881	406,175,552	+$36,856,552	+ 9.98
1882	457,595,259	+ 51,419,707	+12.68
1883	453,441,073	— 4,154,186	— .90
1884	412,989,105	— 40,451,968	— 8.92
1885	427,898,680	+ 14,909,105	+ 3.61
1886	445,786,594	+ 17,887,914	+ 4.16
1887	520,714,474	+ 74,927,880	+16.81
1888	540,781,936	+ 20,067,462	+ 3.85
1889	550,870,845	+ 10,088,909	+ 1.87
1890	619,512,173	+ 68,641,328	+12.46
1891	623,000,644	+ 3,488,471	+ .56
1892	648,675,081	+ 15,674,437	+ 2.52
1893	574,299,886	— 74,375,195	—11.48
1894	526,624,139	— 47,675,747	— 8.30
1895	621,259,000	+ 94,636,861	+17.97
1896	622,533,016	+ 1,274,016	+ .20
1897	630,853,929	+ 8,320,913	+ 1.18
1898	697,817,581	+ 66,963,652	+10.61
1899	972,560,093	+274,742,512	+39.37
1900	1,070,108,889	+ 97,548,796	+10.03

[1] 22d An. Rept. U. S. Geological Survey, 1901.

The average rate of annual increase in the value of the mineral products of the United States from 1880 to 1898 was approximately $20,000,000. The phenomenal gain of $274,742,512 in 1899 over 1898 serves especially to show the great demand for these products, and their consequent increased value. While the value increased 39 per cent, the actual output of the mines was not more than 10 per cent greater than in 1898. The increase in value of nearly 10 per cent in 1900 over 1899, on the other hand, is more nearly the same as the increase in the actual quantities produced.

As a rule it is accepted as a fact that the progress of the mining industry follows the general progress of a country's prosperity by a period of from eighteen months to two years. Taking into account the great progress that has been and is being made in the various industries of the United States during the past few years, the promise of enormous development of mining is likely to be fulfilled. When one considers the total value of the mineral production of the United States for 1889, amounting to $550,870,845, and contrasts with it the value of the products in 1900, $1,070,108,889, an idea is obtained of the present condition and future prospects of the industries connected with mining. When compared with 1880, the first year for which we have any record, the record for 1900 appears still more striking. The value of the mineral products in the closing year of the nineteenth century was almost exactly three times that of 1880. If we assume that the same rate of increase was maintained in earlier years, the production in 1860 was worth $123,100,000; in 1840, about $41,000,000; in 1820, $14,000,000, and in 1800 less than $5,000,000. There are no complete statistics upon which we can base such a statement, but from such records as we have of the production of gold, silver, lead, iron, zinc, coal, and a few other substances these ratios are not unreasonable. Nearly all of our great development in the mining industry, barring gold, was accomplished in the final quarter of the last century, and during the past ten years the United States has led the world in mineral production.

PRESENT CAPITAL, EMPLOYEES, AND WAGES.

The report of the Eleventh Census shows that in 1889 there were engaged directly in the mining industry 636,419 persons who depended on this industry as a regular means of support. They received $265,290,643, or more than 52 per cent of the entire value of what they produced. The statistics of capital invested in the mining industry depend on many chance conditions, as estimates are made of the market value of the properties. The results, however, give an approximate idea of the extent to which the industry is changing from a speculative to a conservative business. The capital invested in the

mining industry in 1889 was $1,340,000,000. Apportioning the respective amounts to the different industries, the details are as set forth in the subjoined table:

Statistics of capital, persons employed, and wages of the principal mining industries in the United States for the year 1889.

[Compiled from the Eleventh Census Reports.]

Kind of mining.	Total capital invested in mines.	Persons employed directly in mining.	Total wages paid.
Gold and silver	$465,980,566	57,307	$40,412,022
Coal	342,757,929	299,559	109,130,928
Petroleum	114,157,370	22,539	8,546,900
Copper	62,623,228	8,721	6,096,025
Iron ore	61,782,287	38,227	15,458,118
Lead and zinc	.....	[1] 4,000	1,220,765
Unspecified to balance	292,718,620	206,066	24,425,885
Total	1,340,000,000	636,419	255,290,643

[1] Estimating 753 miners for Kansas.

DEVELOPMENT TO THE CLOSE OF 1900.

To illustrate the development of the mining industry in the United States, the following tables have been compiled from the publications of the United States Geological Survey.

The information regarding the more important metals and minerals has also been arranged in the form of diagrammatic charts, which show at a glance the development of the individual industries and demonstrate the progress that has been made in this country during the past two or three decades. These charts also illustrate the progress of the respectiveindustries in the principal foreign countries. Standard prices of certain leading articles are also indicated on the charts.

GOLD AND SILVER.

In the following table, showing the production of gold and silver in the United States since 1792, mint or "coinage" value is taken as the basis of calculation—$20.67 per ounce for gold and $1.2929 per ounce for silver.

Product of gold and silver in the United States since 1792.

[The estimate for 1792 to 1873 is by Dr. R. W. Raymond, United States mining commissioner, and since by the Director of the Mint.]

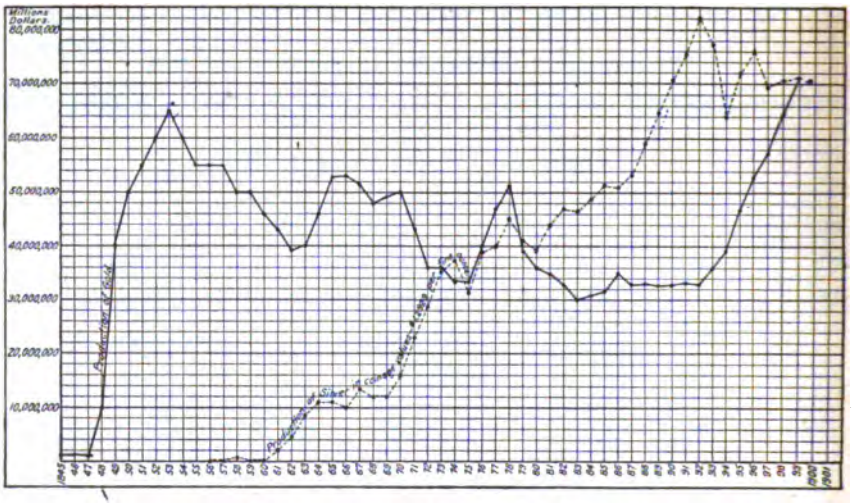
Year.	Gold.	Silver.	Year.	Gold.	Silver.
Apr. 2, 1792, to July 31, 1834	$14,000,000	(1)	1872	$36,000,000	$28,750,000
			1873	36,000,000	35,750,000
July 31, 1834, to Dec. 31, 1844	7,500,000	$250,000	1874	33,500,000	37,300,000
			1875	33,400,000	31,700,000
1845	1,008,327	50,000	1876	39,900,000	38,800,000
1846	1,139,357	50,000	1877	46,900,000	39,800,000
1847	889,085	50,000	1878	51,200,000	45,200,000
1848	10,000,000	50,000	1879	38,900,000	40,800,000
1849	40,000,000	50,000	1880	36,000,000	39,200,000
1850	50,000,000	50,000	1881	34,700,000	43,000,000
1851	55,000,000	50,000	1882	32,500,000	46,800,000
1852	60,000,000	50,000	1883	30,000,000	46,200,000
1853	65,000,000	50,000	1884	30,800,000	48,800,000
1854	60,000,000	50,000	1885	31,800,000	51,600,000
1855	55,000,000	50,000	1886	35,000,000	51,000,000
1856	55,000,000	50,000	1887	33,000,000	58,350,000
1857	55,000,000	50,000	1888	33,175,000	59,195,000
1858	50,000,000	500,000	1889 mint	32,800,000	64,646,000
1859	50,000,000	100,000	1889 census	32,886,180	66,396,686
1860	46,000,000	150,000	1890	32,845,000	70,485,714
1861	43,000,000	2,000,000	1891	33,175,000	75,416,565
1862	39,200,000	4,500,000	1892	33,000,000	82,101,000
1863	40,000,000	8,500,000	1893	35,955,000	77,576,000
1864	46,100,000	11,000,000	1894	39,500,000	64,000,000
1865	53,225,000	11,250,000	1895	46,610,000	72,051,000
1866	58,500,000	10,000,000	1896	53,088,000	76,069,236
1867	51,725,000	13,500,000	1897	57,363,000	69,637,172
1868	48,000,000	12,000,000	1898	64,463,000	70,384,485
1869	49,500,000	12,000,000	1899	71,053,000	70,806,626
1870	50,000,000	16,000,000	1900	79,322,281	77,070,471
1871	43,500,000	23,000,000	1901 [2]	80,218,800	77,000,000

[1] Insignificant.

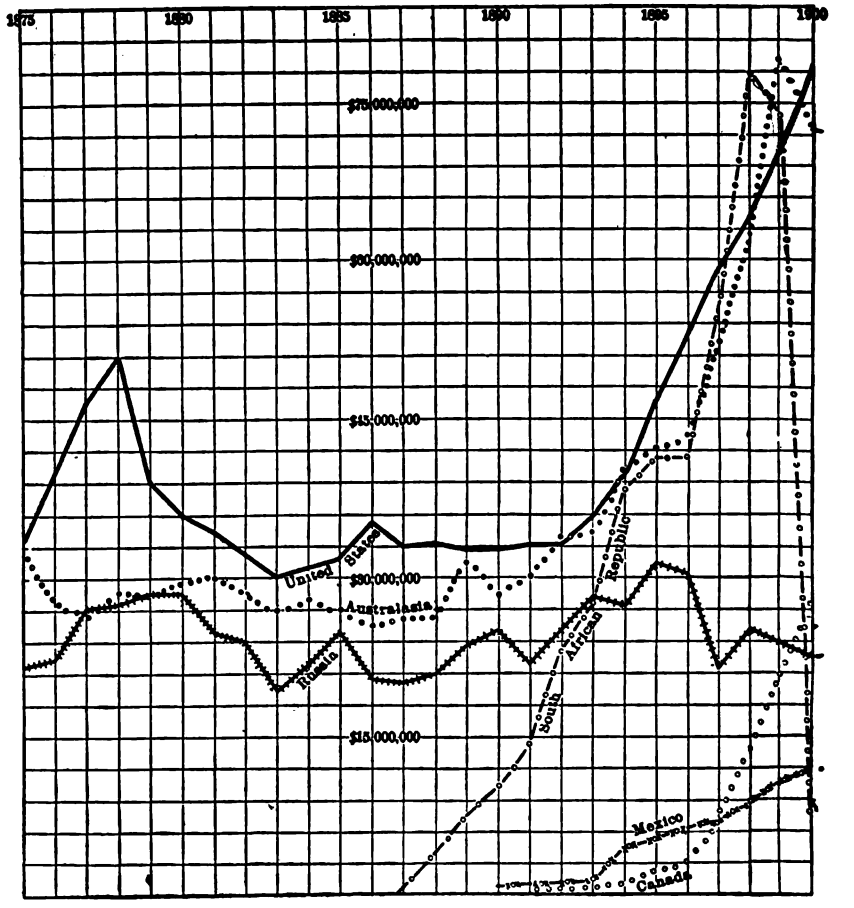
[2] Preliminary estimate.

From these tables and diagrams it will be seen that the production of gold in the United States, which was swelled greatly after the discoveries in California and other Western States about the middle of the century, fell off from 1872 to about 1893, the production in these years averaging only about $35,000,000 annually. Since 1893 there has been a rapid increase in production, partly due to the discoveries in Alaska. The output for 1900 reached no less than $79,322,218. The production of silver, which was very small up to 1860, increased rapidly until 1873, when it reached $35,750,000. From this time on there was a steady though somewhat less rapid increase until 1892, when the maximum of $82,101,000 was reached. The decrease in the value of silver produced since that time has been due altogether to the great fall in its price, the actual output in ounces having continued to increase. The coinage value of the output for 1900 was only slightly less than that of gold, $74,533,475. Preliminary figures for 1901 indicate that the output of gold has been only slightly greater than in 1900, and that the quantity and value of silver produced was about the same as in 1900.

Production of gold and silver in the United States from 1845 to 1899.

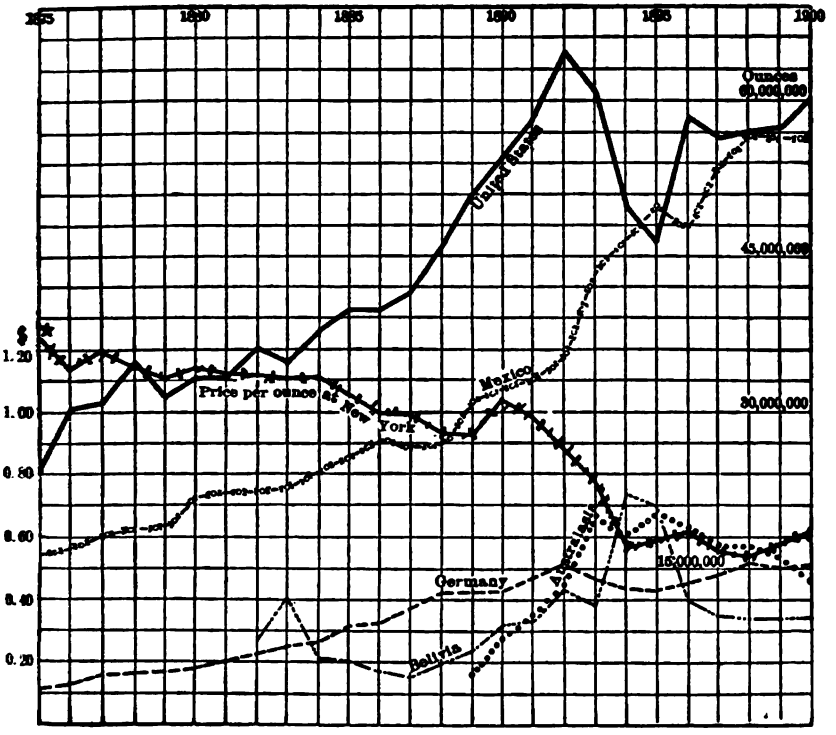


Production of gold in the principal countries of the world from 1875 to 1900; values in United States currency.



The diagram on the opposite page shows that, in 1900, the United States attained a gold production greater than that of any other country. This condition, however, was due to the sudden falling off of the output in South Africa on account of the Boer war. Prior to that war the production in the United States, in South Africa, and in Australasia, respectively, was approximately the same; and in all three fields the output had increased with very great rapidity since 1890. Indeed production in South Africa scarcely dates back of that year. Russian gold fields produce from twenty to thirty millions of dollars yearly, with no special tendency to increase.

Production of silver in the principal countries of the world from 1875 to 1900, in troy ounces.



The production of silver, as is readily seen by the above diagram (which shows ounces, not value), is largely confined to North America, although the output of several South American countries, not shown in the diagram, is of some little importance. The Mexican mines show an upward movement closely parallel to that in our own country, except that the marked falling off in the production of the United States during the early nineties, due chiefly to the change in our currency laws, is not seen in Mexico. The present output in the two countries is nearly equal, each producing about 60,000,000 ounces of

silver yearly. Germany also produces a moderate amount of silv but with little tendency to increase in recent years. The Australi production sprang up rapidly in the early nineties, but is now declinin

COPPER.

One of the most conspicuous developments in mining industry du ing the past ten or fifteen years has been the immense increase in t production of copper, to a considerable degree explained by the gre demand for this metal in electrical construction. From the table will be seen that the production of copper in the United States h increased more than twentyfold within thirty years and more than te fold since 1880. The output in 1880 was 27,000 long tons; in 189 115,966 tons, while in 1900 it had leaped to 270,588 tons, valued $98,494,039.

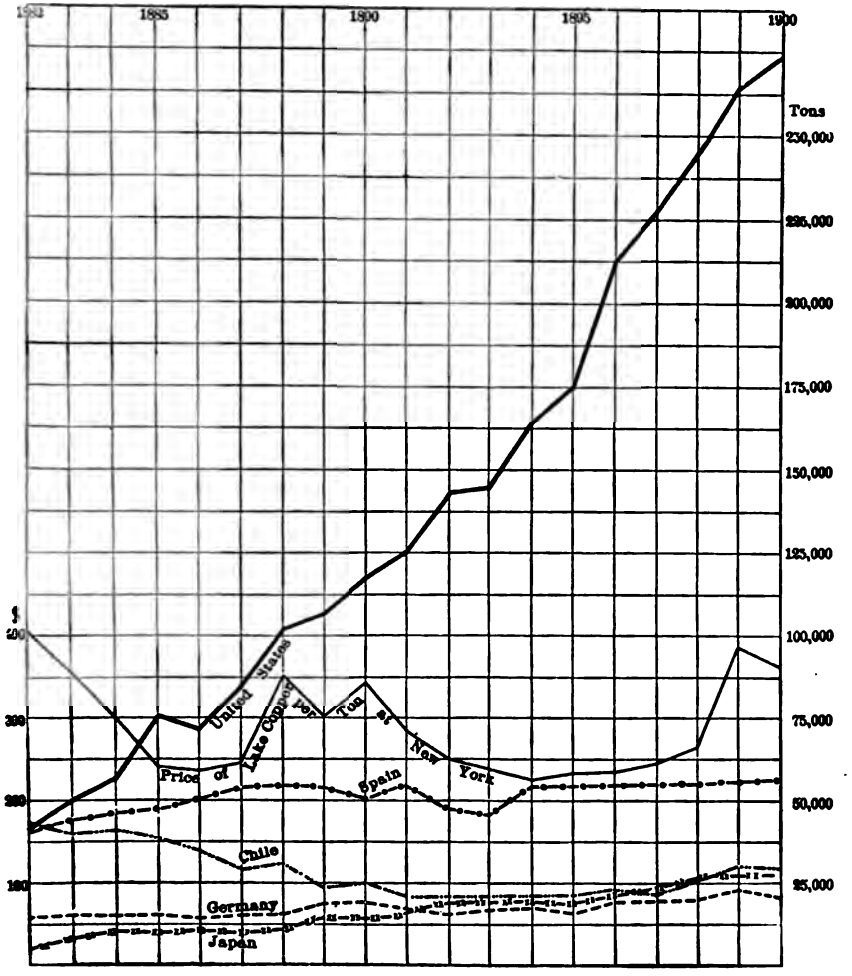
Production of copper in the United States from 1845 to 1900.

[In tons of 2,240 pounds.]

Year.	Production.	Year.	Production.	Year.	Produ tion.
1845	100	1864	8,000	1883	51,5
1846	150	1865	8,500	1884	64,7
1847	300	1866	8,900	1885	74,0
1848	500	1867	10,000	1886	70,4
1849	700	1868	11,600	1887	81,0
1850	650	1869	12,500	1888	101,0
1851	900	1870	12,600	1889	101,2
1852	1,100	1871	13,000	1890	115,9
1853	2,000	1872	12,500	1891	126,8
1854	2,250	1873	15,500	1892	154,0
1855	3,000	1874	17,500	1893	147,0
1856	4,000	1875	18,000	1894	156,1
1857	4,800	1876	19,000	1895	169,2
1858	5,500	1877	21,000	1896	205,2
1859	6,300	1878	21,500	1897	220,5
1860	7,200	1879	23,000	1898	235,0
1861	7,500	1880	27,000	1899	253,8
1862	9,000	1881	32,000	1900	270,5
1863	8,500	1882	40,467		

The United States to-day produces more copper than all the rest o the world combined. As seen by the diagram on the opposite page, the country having the next largest output is Spain, which mines about a fifth as much copper as our own country, while Chile, Germany, and Japan each produce in the neighborhood of 25,000 tons. In none of these foreign countries is the production increasing with any considerable rapidity. The recent great increase in the price of copper is also clearly shown on the chart. A further discussion of the price movements of 1900 and 1901 will be found on pages 231 and following.

Production of copper in the principal countries of the world from 1882 to 1900, in metric tons (2,204 pounds); also price of lake copper per metric ton at New York.



LEAD.

Exceedingly rapid also has been the increase in American production of lead. In 1870 this country produced 17,830 short tons of refined lead, while the output in 1900 was 270,824 tons, with a value of $23,561,688. The increase in production from 1896, when the output was 188,000 tons, is especially conspicuous.

The movement from 1825 to 1900 is shown in the following table:

Production of refined lead in the United States from 1825 to 1900, inclusive.

[In tons of 2,000 pounds.]

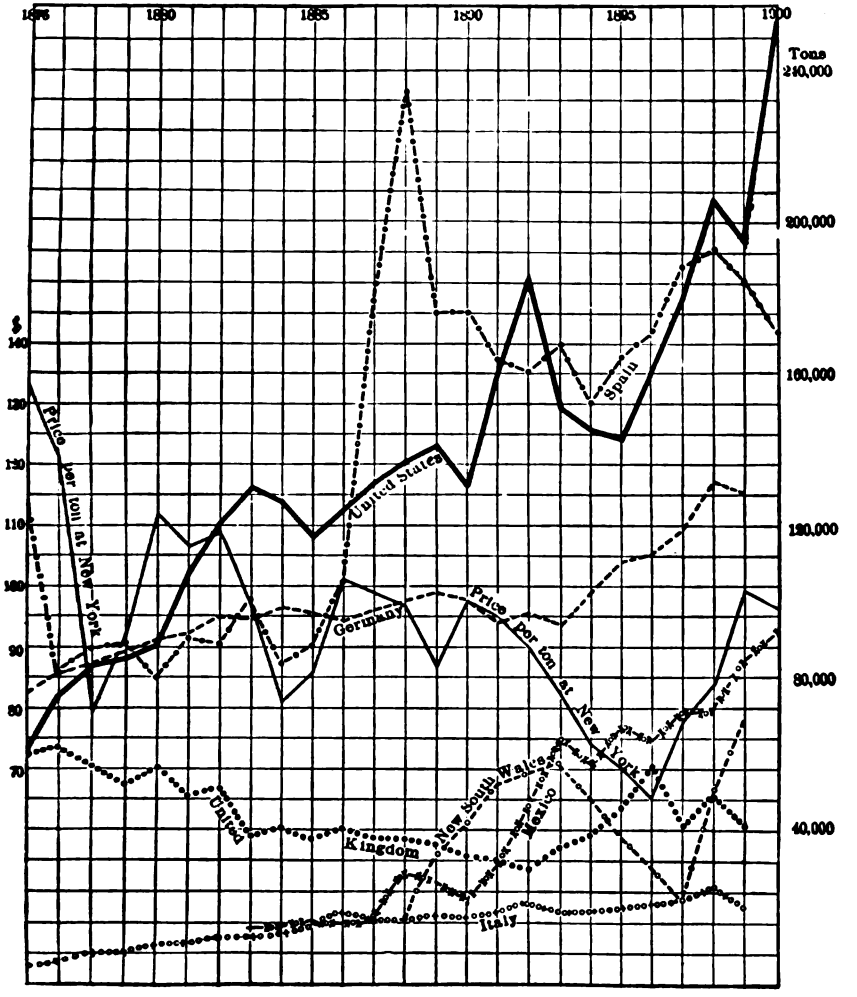
Year.	Production.	Year.	Production.	Year.	Production.
1825	1,500	1853	16,800	1877	81,900
1830	8,000	1854	16,500	1878	91,060
1831	7,500	1855	15,800	1879	92,780
1832	10,000	1856	16,000	1880	97,825
1833	11,000	1857	15,800	1881	117,085
1834	12,000	1858	15,300	1882	132,890
1835	13,000	1859	16,400	1883	143,957
1836	15,000	1860	15,600	1884	139,897
1837	13,500	1861	14,100	1885	129,412
1838	15,000	1862	14,200	1886	[1] 130,629
1839	17,500	1863	14,800	1887	[1] 145,700
1840	17,000	1864	15,700	1888	151,919
1841	20,500	1865	14,800	1889	156,397
1842	24,000	1866	16,100	1890	143,630
1843	25,000	1867	15,200	1891	178,554
1844	26,000	1868	16,400	1892	173,305
1845	30,000	1869	17,500	1893	162,982
1846	28,000	1870	17,830	1894	[2] 162,686
1847	28,000	1871	20,000	1895	[2] 170,000
1848	25,000	1872	25,880	1896	[2] 188,000
1849	23,500	1873	42,540	1897	[2] 212,000
1850	22,000	1874	52,080	1898	222,000
1851	18,500	1875	59,640	1899	210,500
1852	15,700	1876	64,070	1900	270,824

[1] Estimated.

[2] Arrived at from direct returns from smelters.

The recent great increase in American lead production has placed this country ahead of any other, Spain having lost its foremost place, as may readily be seen by the diagram on the opposite page. Indeed, the Spanish output shows an absolute decrease during the years 1899 and 1900, and in the latter year was only two-thirds as great as that of the United States. Germany ranks next to Spain and has increased her production rapidly in recent years. The advance in the lead industry of Mexico has been almost as rapid as in the United States, and that country now produces more than 80,000 tons yearly. Great Britain produces at present about 40,000 tons of lead annually, her output having fallen off somewhat during the past twenty-five years. New South Wales entered the field as a lead producer about 1890, and, though the output fell off greatly after a few years, it is now again increasing rapidly.

Production of lead in the principal countries of the world from 1876 to 1900, in metric tons (2,204 pounds); also price per metric ton at New York.



ZINC.

The production of zinc in the United States from year to year is shown in the table on the following page. The output increased with great rapidity from 1873 to 1892, multiplying more than twelvefold. The output was less in 1896, but by 1899 had increased nearly 60 per cent above the figure for that year, reaching 129,051 tons.

Production of spelter (zinc) in the United States.

[In tons of 2,000 pounds.]

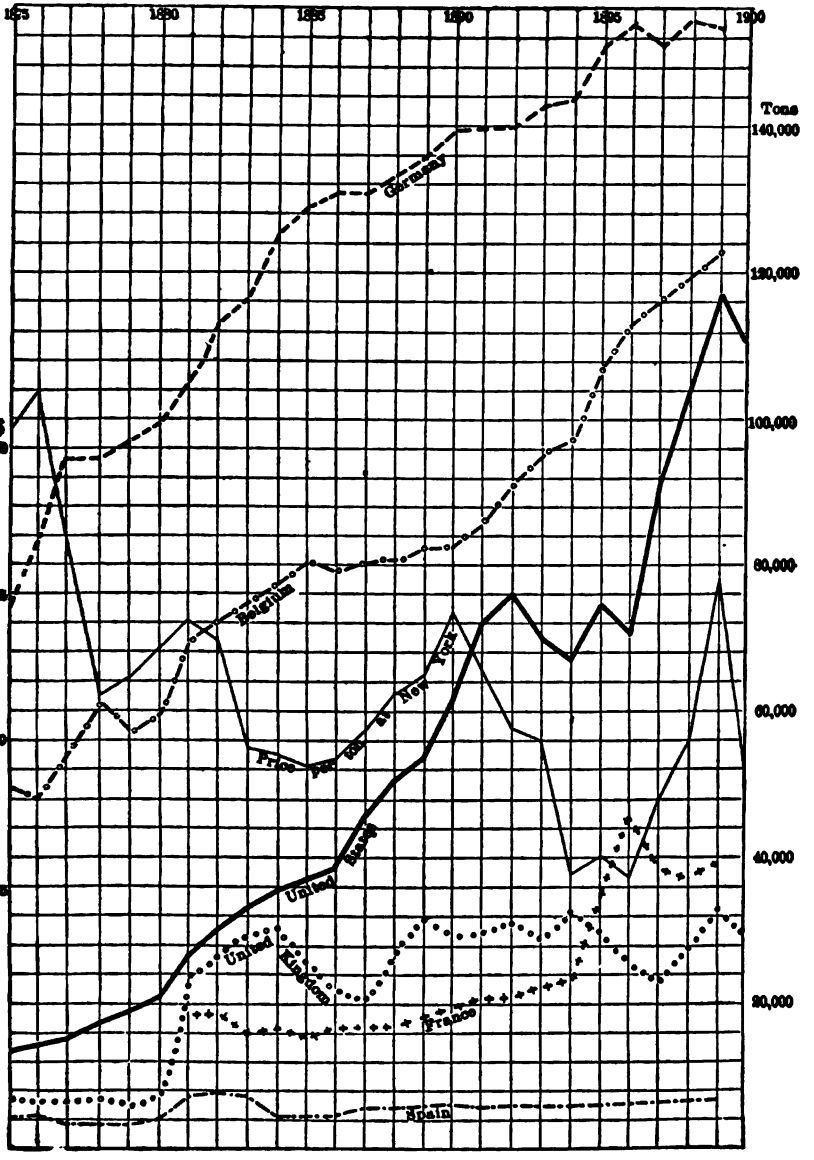
Year.	Production.	Year.	Production.	Year.	Production.
1873	7,343	1887	50,340	1895	89,686
1875	15,833	1888	55,903	1896	81,499
1880	23,239	1889	58,860	1897	99,980
1882	33,765	1890	63,683	1898	115,399
1883	36,872	1891	80,873	1899	129,051
1884	38,544	1892	87,260	1900	123,886
1885	40,688	1893	78,832		
1886	42,641	1894	75,328		

The diagram opposite compares the production of zinc in the leading countries. The United States ranks third, producing nearly as much as Belgium and about three-fourths as much as Germany. All three of these countries show a very rapid increase in output since 1875, though our own country is gaining more rapidly than the others. Great Britain and France also produce considerable quantities of zinc.

IRON AND STEEL.

Even more important to the development of the country than the production of the more valuable metals is that of iron and steel. The figures for the development of this industry are shown in the table on page 214.

Production of zinc in the principal countries of the world from 1875 to 1900, in metric tons (2,204 pounds); also price per metric ton at New York.[1]



The above diagram represents the production by smelters, and includes zinc made from both foreign and domestic ores. In Belgium a large part of the output is derived from imported ores, and this is true also of the United Kingdom and France. The United States, Germany, and Spain are exporters of ore.

Total production of pig iron in the United States, 1854 to 1900.

[In tons of 2,240 pounds.]

Year.	Production.	Year.	Production.	Year.	Production.
1854	657,337	1870	1,665,178	1886	5,683,326
1855	700,158	1871	1,706,892	1887	6,417,156
1856	788,514	1872	2,548,729	1888	6,489,738
1857	712,638	1873	2,560,959	1889	7,603,640
1858	629,547	1874	2,401,263	1890	9,202,703
1859	750,559	1875	2,023,735	1891	8,279,870
1860	821,222	1876	1,868,959	1892	9,157,000
1861	673,061	1877	2,006,593	1893	7,124,502
1862	703,269	1878	2,301,214	1894	6,657,388
1863	846,070	1879	2,741,851	1895	9,446,308
1864	1,014,281	1880	3,835,190	1896	8,623,127
1865	831,770	1881	4,144,252	1897	9,652,680
1866	1,205,663	1882	4,623,232	1898	11,773,934
1867	1,305,122	1883	4,595,510	1899	13,620,703
1868	1,403,900	1884	4,097,869	1900	13,789,242
1869	1,711,286	1885	4,044,524		

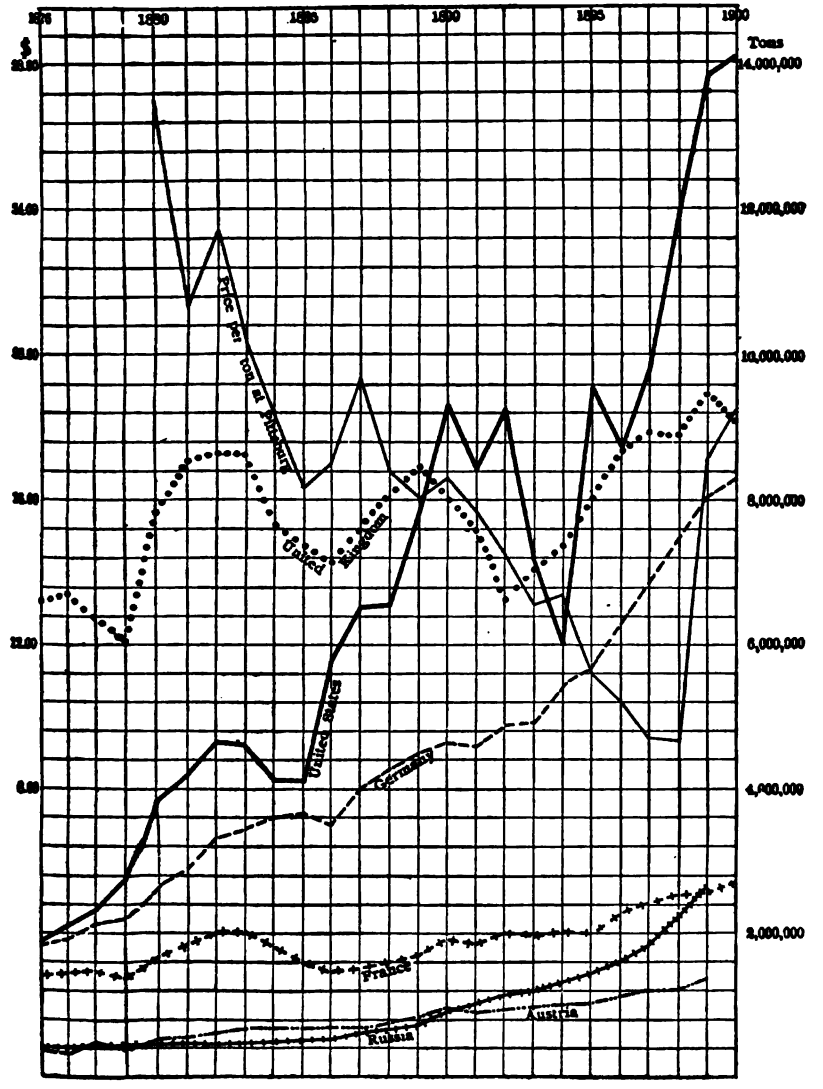
Total production of steel in the United States, 1865 to 1900.

[In tons of 2,240 pounds.]

Year.	Production.	Year.	Production.	Year.	Production.
1865	14,000	1877	572,000	1889	3,410,000
1866	17,000	1878	735,000	1890	4,295,000
1867	20,000	1879	939,000	1891	3,822,000
1868	27,000	1880	1,241,000	1892	4,927,000
1869	31,000	1881	1,595,000	1893	4,020,000
1870	67,000	1882	1,743,000	1894	4,412,000
1871	74,000	1883	1,680,000	1895	6,115,000
1872	143,000	1884	1,557,000	1896	5,672,000
1873	200,000	1885	1,719,000	1897	7,289,000
1874	215,000	1886	2,573,000	1898	9,076,000
1875	390,000	1887	3,353,000	1899	10,833,000
1876	534,000	1888	2,897,000	1900	10,218,572

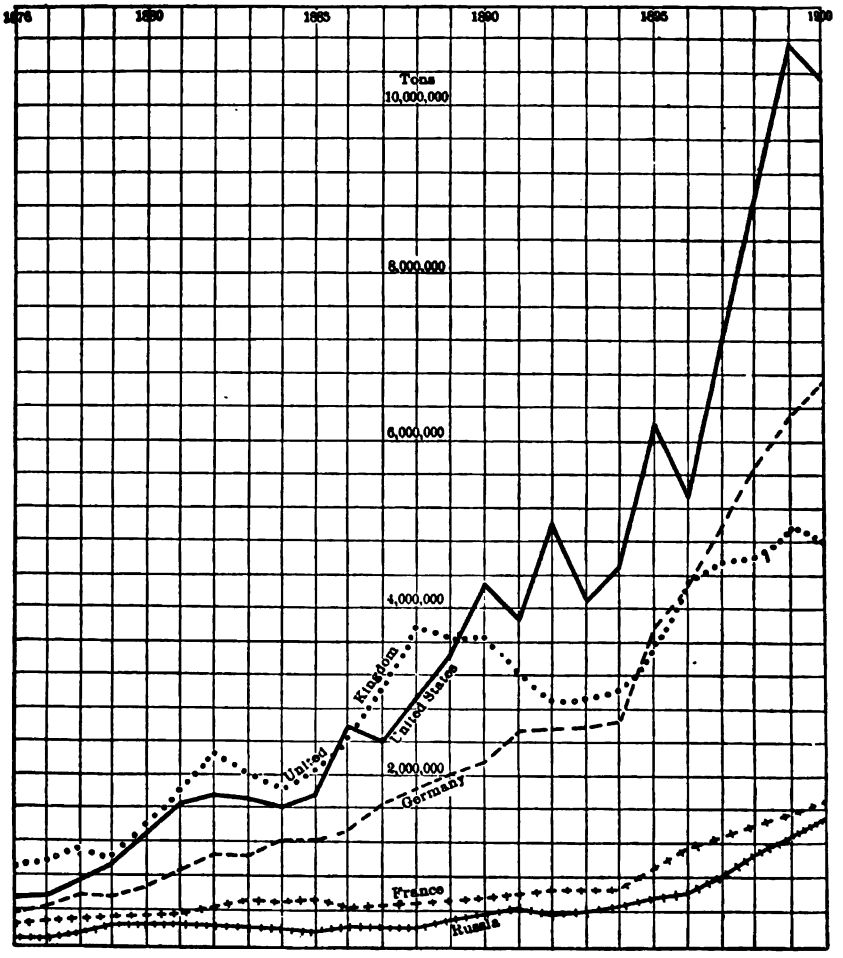
From the tables it will be seen that the output of pig iron in the United States has multiplied fully eightfold since 1870, rising from 1,665,178 long tons to 13,789,242 long tons in 1900. The increase in the production of pig iron during the three years 1898 to 1900 was especially marked. From 1890 to 1897 the production, which fluctuated very considerably, averaged only about 9,000,000 tons yearly, with no special tendency toward an increase. The production of steel during the more recent years is quite closely parallel to that of pig iron, but in early years a much smaller proportion of iron was turned into steel than is at present the case. In 1870 only 67,000 tons of steel were produced in this country and in 1881 1,241,000 tons, the production of iron in the latter year being more than three times as great as that of steel. In 1899, however, 10,833,000 tons of steel were produced, or more than three-fourths as much as the production of pig iron.

Production of pig iron in the principal countries of the world from 1876 to 1900, in metric tons (2,204 pounds).



From the above diagram it may readily be seen that the United States leads the world in the production of pig iron, the output being over 5,000,000 tons more than that of the United Kingdom and nearly 6,000,000 tons more than Germany. Only in the last-named country has the increase of production been in any degree parallel to that in the United States.

Production of steel in the principal countries of the world from 1876 to 1900, in metric tons (2,204 pounds).



The production of steel in this country as compared with others shows our progress even more clearly than that of pig iron. A larger proportion of our pig iron is made into steel than is the case in Great Britain. The diagram above shows, however, that Germany has increased her steel production with great rapidity since 1895. Further statistics regarding the production of iron and steel in the United States and in foreign countries are given in[1] the report on Manufactures, Trade, and Commerce.

[1] See pp. —.

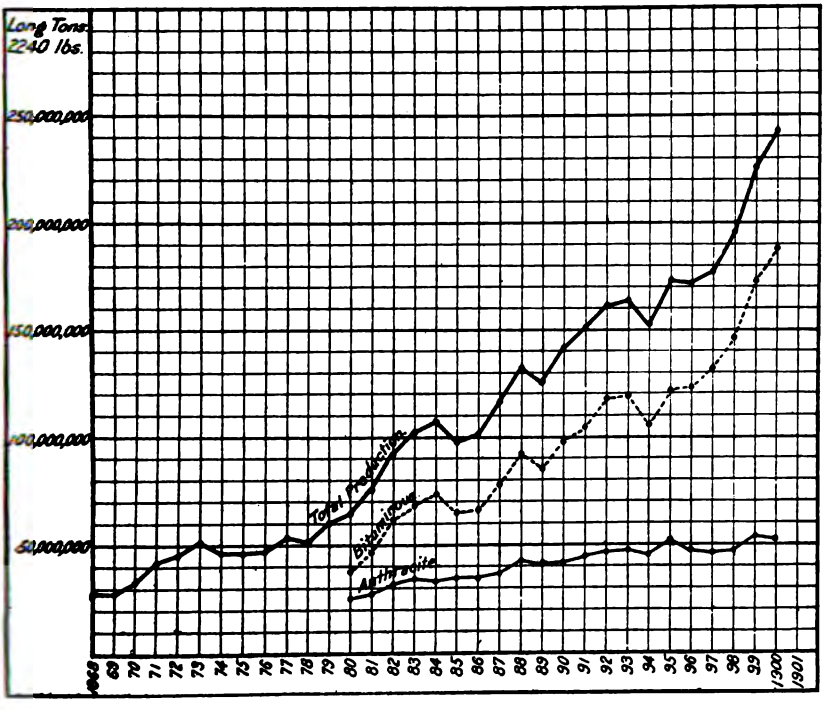
COAL.

Production of coal in the United States from 1868 until 1900 (long tons).

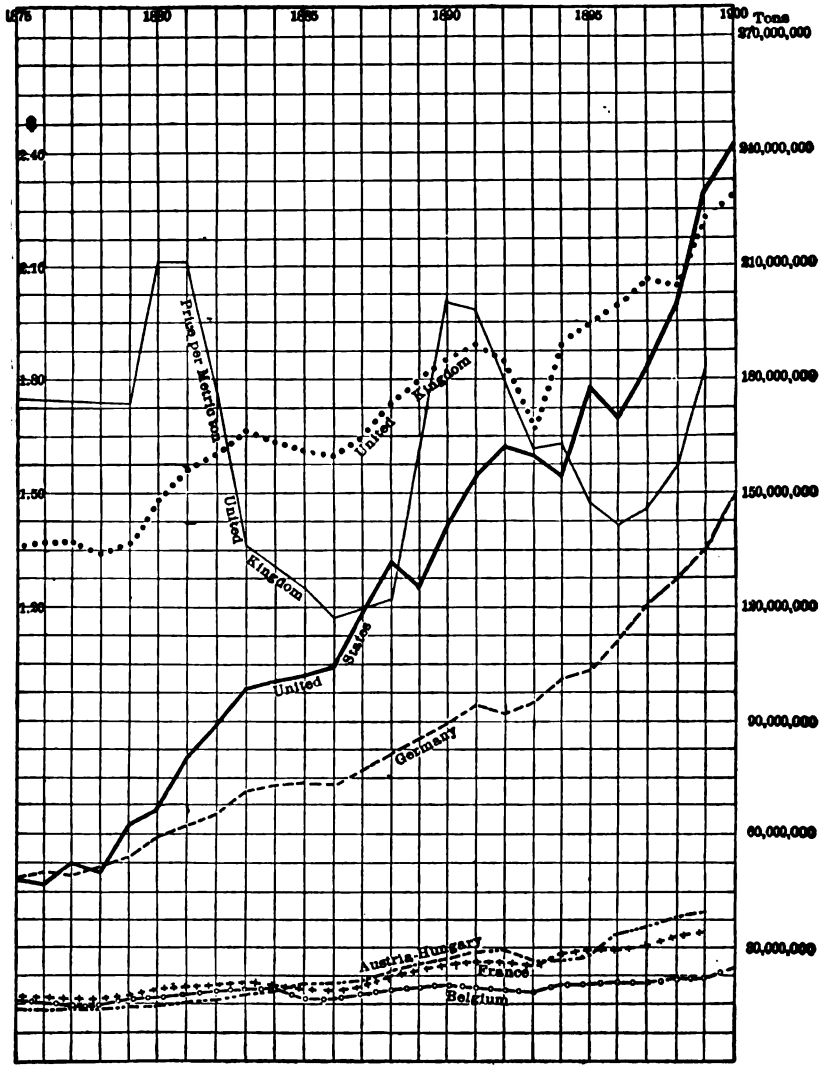
Year.	Anthracite.	Bituminous.	Total.	Year.	Anthracite.	Bituminous.	Total.
1868			28,258,000	1885	34,228,548	64,840,668	99,069,216
1869			28,268,000	1886	34,853,077	66,646,947	101,500,024
1870			32,863,000	1887	37,578,747	79,078,227	116,651,974
1871			41,384,000	1888	41,624,611	91,107,002	132,731,613
1872			45,416,000	1889	40,665,152	85,432,717	126,097,869
1873			51,004,000	1890	41,489,858	99,377,073	140,866,931
1874			46,916,000	1891	45,236,992	105,268,962	150,505,954
1875			46,686,000	1892	46,850,450	113,264,792	160,115,242
1876			47,500,000	1893	48,185,306	114,629,671	162,814,977
1877			53,948,000	1894	46,358,144	106,089,647	152,447,791
1878			51,655,000	1895	51,785,122	120,641,244	172,426,366
1879			59,333,000	1896	48,523,287	122,893,104	171,416,390
1880	25,580,189	38,242,641	63,822,830	1897	46,974,714	131,794,630	178,769,344
1881	28,500,016	48,365,341	76,865,357	1898	47,663,076	148,742,878	196,405,953
1882	31,358,264	60,861,190	92,219,454	1899	53,944,647	172,608,917	226,553,564
1883	34,336,469	68,531,500	102,867,969	1900	51,221,353	189,774,564	240,965,917
1884	33,175,756	73,730,539	106,906,295				

Coal has been quite as indispensable a factor in the industrial progress of the nation as iron and steel. The output of coal has increased in roughly the same proportion as that of iron, multiplying nearly eightfold since 1870. In the former year the amount of coal produced was 32,863,000 long tons, while in 1900 the output was 240,965,917 tons. The production of coal has increased by a hundred million tons during the past decade. The increase has been very great since 1897, when the production was 178,769,344 tons.

Production of coal in the United States from 1868 until 1900, in long tons (2,240 pounds).



Production of coal in the principal countries of the world from 1875 to 1900, in metric tons (2.204 pounds).



The diagram above shows that the United States has, during 1899 and 1900, wrested from Great Britain the position of supremacy in the production of coal, which she formerly held. The output of Great Britain has risen steadily, but her mines have been worked so much longer than our own that an increase of production means constantly increasing difficulty and expense of operation. The coal production of Germany has also risen rapidly and now amounts to 150,000,000 tons annually. The production in other European countries is comparatively small, or wholly lacking, and most of them have to import coal.

PETROLEUM.

The following table shows the progress of the petroleum industry in this country:

Production of crude petroleum in the United States from 1859 to 1900.

[Barrels of 42 gallons.]

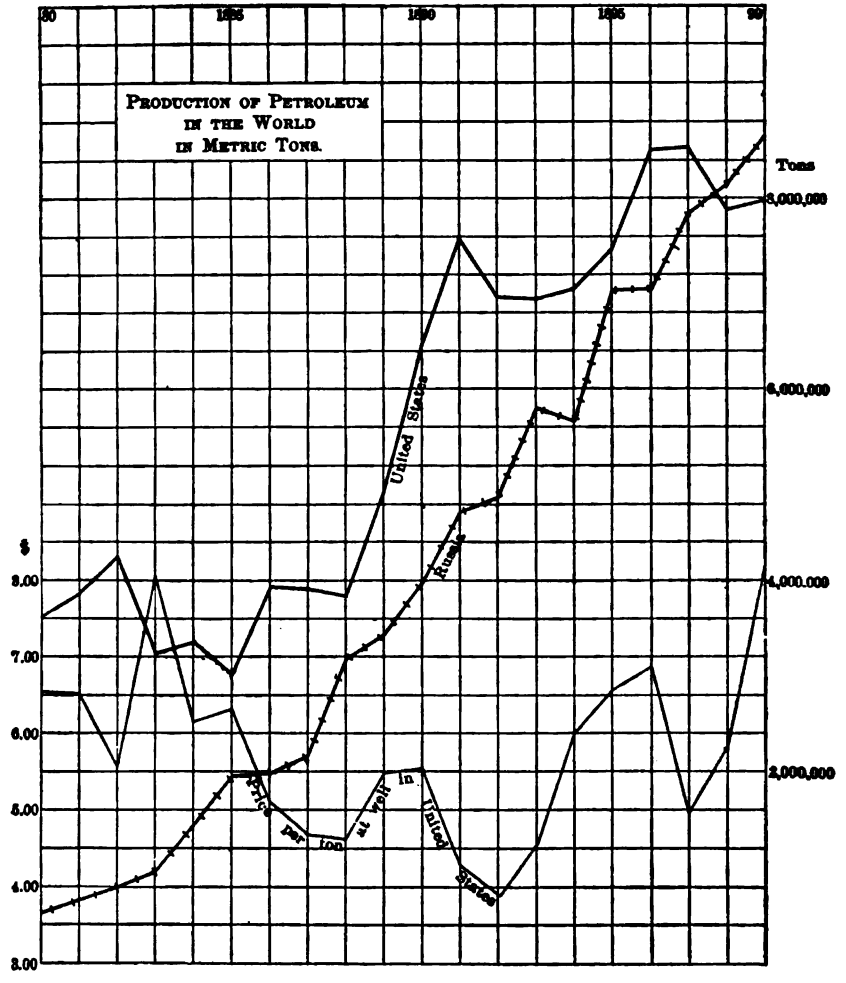
Year.	Production.	Year.	Production.	Year.	Production.
1859	2,000	1874	10,926,945	1889	35,163,513
1860	500,000	1875	[2]12,162,514	1890	45,823,572
1861	2,113,609	1876	9,132,669	1891	54,292,655
1862	[1]3,056,690	1877	13,350,363	1892	50,509,657
1863	2,611,309	1878	15,396,868	1893	48,431,066
1864	2,116,109	1879	19,914,146	1894	49,344,516
1865	2,497,700	1880	26,286,123	1895	52,892,276
1866	3,597,700	1881	27,661,238	1896	[3]60,960,361
1867	3,347,300	1882	30,510,830	1897	[3]60,475,516
1868	3,646,117	1883	23,449,633	1898	[3]55,364,233
1869	4,215,000	1884	24,218,438	1899	[3]57,070,850
1870	5,260,745	1885	21,858,785	1900	[3]63,362,704
1871	5,205,234	1886	28,064,841		
1872	6,293,194	1887	28,283,483	Total	1,006,876,313
1873	9,893,786	1888	27,612,025		

[1] In addition to this amount, it is estimated that for want of a market some 10,000,000 barrels ran to waste in and prior to 1862 from the Pennsylvania fields; also a large amount from West Virginia and Tennessee.

[2] Including all production prior to 1876 in Ohio, West Virginia, and California.

[3] In addition to this amount, 4,325 barrels of crude oil were produced in Kentucky and Tennessee in 1896, 4,577 barrels in 1897, 19,152 barrels in 1898, 13,578 barrels in 1899, and 19,712 barrels in 1900, for which, as none was sold or used, no value could be given.

The production of crude petroleum dates only from about 1860, when the first discoveries in Pennsylvania were made. The output in 1870 reached 5,260,745 barrels, and since that time it has increased more than twelvefold. During the years from 1880 to 1888 there was practically no increase in the production of petroleum, but since that time the discoveries of new fields in West Virginia, Ohio, Colorado, California, and elsewhere have resulted in a very rapid increase. The production rose from 27,612,025 barrels in 1888 to 63,362,704 barrels in 1900.



The production of petroleum is almost wholly confined to the United States and Russia. The practical development of the industry in Russia took place much later than in our own country. The Russian output, however, has increased with very great rapidity and now exceeds somewhat that of the United States. The Russian oil is much less rich in illuminating material than the American product, but the cost of producing the crude oil is so low that the Russians are able to compete in many European markets.

INFLUENCE OF MINING ON MANUFACTURES AND ON SOCIAL CONDITIONS.

The beneficial influence of the mining industry on the development of manufactures and social conditions is widespread and far-reaching. A few instances will illustrate the great strides that have been made in the advancement of civilization as a direct result of the development of the mineral industry of the world. First and foremost is the iron and steel industry, with reference to which it may be accepted as an axiom that the progress of a country in civilization is reflected in the quantity of these products consumed. The construction of railroads, steamships, and war vessels; of trolley lines; of iron piping for gas and oil transportation; of immense structures of skeleton steel for buildings, bridges, viaducts, and the like; of enormous tunnels, shafts, and subway excavations requiring steel linings or braces, and of many similar structures, is now carried out on a scale that was hardly dreamed of a half a century ago.

The increase in the use of iron and steel for railroad construction, which is peculiarly typical of the progress of the country's development, may be understood from the fact that the railroad mileage of the country increased from 2,818 miles in 1840 to 52,922 miles in 1870 and 194,321 miles in 1900.

The following table shows the statistics for each census period:

Number of miles of railroad constructed and in operation at end of decades from 1830 to 1900.

[Poor's Manual, I, 1900.]

Year.	Amount constructed.	Annual increase.	Year.	Amount constructed.	Annual increase.
	Miles.	*Miles.*		*Miles.*	*Miles.*
1830	23	.....	1870	52,922	6,078
1840	2,818	516	1880	93,262	6,706
1850	9,021	1,656	1890	166,654	5,378
1860	30,626	1,837	1900	194,321	3,981

Not only is the increased use of metal products important in the development of new industries and constructions, but also in the substitution of more enduring and better things for those of inferior character. Wooden steamships and war vessels, for example, are now a relic of bygone days, and, except for coastwise trade, steel sailing vessels have largely supplanted those of wood. We have but to point to the American Navy, which has been constructed of American steel, and to our merchant marine, to which in one year over one hundred iron vessels of American construction and material have been added, to understand the significance of this change. Wooden buildings and bridges are now being replaced by those of steel, and even stone structures are rapidly being supplanted by those of metal. Wire netting

and plates are being substituted for walls and partitions formerly of wood, hollow tiling and iron girders for wooden floors and beams, metal roofing for shingles, etc. The use of such metallic construction materials is of especial advantage where fire is liable to originate, as for furnace buildings, factories, shaft houses, etc. This change in the method of constructing bridges and buildings has taken place almost entirely within the past twenty-five years. Here, as in other lines, American methods in the manufacture of structural material, as well as in construction itself, have been developed to a high degree of efficiency.

PRODUCTION, CONSUMPTION AND PRICES.

The influences affecting the prices and production of metal products are numerous and complicated. One influence which has made itself felt in connection with several classes of products during recent years is that of combination among producers. This subject is discussed under another head. Another influence is that of tariff legislation, both of this country and of other countries.

EFFECT OF AMERICAN TARIFF LEGISLATION.

The general discussion of the subject of the protective tariff will be found in connection with that part of this report which deals with manufactures and general business and with trusts and industrial combinations. For the most part our protective duties rest on manufactured articles, and affect the mining industries chiefly through their influence on the prices of articles into which the products of the mines enter as a raw material. The tariff duties on iron ore and on bituminous coal doubtless exercise some influence as regards prices and production in certain limited sections of the country; but, for the most part, they can be supplied as cheaply to American consumers from American mines as from mines of other countries, even in the absence of protective duties.

One illustration of the direct effect of tariff legislation on the mineral industries may be drawn from the case of salt. The effect of changes in the tariff on the production and importation of salt in the United States[1] is shown in the percentage of imports to total consumption, as follows:

Percentage of imports to total consumption of salt, United States, 1880–1900.

1880	36.5	1886	26.8	1892	12.3	1898	7.0
1881	39.1	1887	24.5	1893	9.49	1899	6.4
1882	32.5	1888	21.7	1894	10.71	1900	6.4
1883	33.4	1889	18.7	1895	12.78		
1884	33.3	1890	17.2	1896	11.88		
1885	31.5	1891	14.5	1897	8.57		

[1]Twenty-second Annual Report, Mineral Resources, U. S. Geological Survey.

During this time the domestic production of salt gradually increased from an annual output of 5,961,060 barrels in 1880 to 20,869,342 barrels in 1900.

From this table it will be seen that up to 1893 there was a steady decrease in the proportion of imports of salt to total consumption in the United States. Indeed, the absolute quantity of imported salt greatly decreased, reaching the minimum of 348,519,173 pounds in 1893. In 1894 salt was placed on the free list and the importations rose to 559,151,669 pounds in 1895. The tariff act of 1897 restored the duty and the importations fell off in that year, while in 1898 they were reduced to 371,059,452 pounds.

EFFECT OF CANADIAN BOUNTY LAWS ON IRON AND STEEL.

According to James M. Swank, in his report on Iron and Steel at the Close of the Nineteenth Century, for the Twenty-second Annual Report, Part VI, United States Geological Survey, the progress of the Canadian iron and steel industries in recent years has been greatly promoted by the bounty act of the Dominion parliament of June 29, 1897, which provides for the payment of liberal bounties by the Dominion government to the manufacturers of "steel ingots, puddled iron bars, and pig iron," $3 per ton to be paid "on steel ingots manufactured from ingredients of which not less than 50 per cent of the weight thereof consists of pig iron made in Canada;" $3 per ton "on puddled iron bars manufactured from pig iron made in Canada;" $3 per ton "on pig iron on the proportion produced from Canadian ore;" and $2 per ton "on pig iron on the proportion produced from foreign ore." By the terms of the act referred to, these bounties were to terminate on April 23, 1902, but an act of the Dominion parliament, dated August 11, 1899, extended the bounty provisions to June 30, 1907, provided, however, that they should be annually reduced after April 23, 1902, as follows: From that date to June 30, 1903, 90 per cent shall be paid; from July 1, 1903, to June 30, 1904, 75 per cent; from July 1, 1904, to June 30, 1905, 55 per cent; from July 1, 1905, to June 30, 1906, 35 per cent; from July 1, 1906, to June 30, 1907, 20 per cent. The act of August 11, 1899, also provided that "notwithstanding anything in the statutes of 1897, or in this act, no bounty shall be paid under this act on steel ingots made from puddled iron bars manufactured in Canada." The bounty provisions of the act of June 29, 1897, were held to have come into force on April 23, 1897.

Production of pig iron in Canada.
[In metric tons, 2,204 pounds.]

Year.	Production.
1896	47,685
1897	49,497
1898	69,248
1899	95,582
1900	87,612

RELATION OF PRICES, PRODUCTION, AND CONSUMPTION.

The relation between the consumption of material products and the price, and that between the price and the production, is peculiarly complicated. The strength of the demand for metal products is very great. On the other hand, some at least of these products can not readily be increased to meet a rapid increase in demand, while the fortuitous nature of discoveries in some instances tends to make the production bear little relation to the demand. Nevertheless, the mining industries are, through modern improvements, becoming more and more systematic in their methods, and less and less speculative. In general, therefore, the higher the price of mineral products rises, the greater the production probably will be. An increase in their price, in many instances, would render profitable operations which at a lower price could not be carried on except at a loss. As in the case of other products, an increase in production tends naturally to lower prices unless other influences intervene.

During recent years higher costs of labor, fuel, supplies, and other material, aided by advanced freight rates from mine to market, have increased the cost of producing the metals. It is a question in the copper, iron, and steel, and, indeed, in the metal trades generally, whether consumption will continue in this country at the tremendous rate of the last few years, and, if not, whether more normal prices will bring out a latent demand. Both copper and lead have of late been sustained at artificially high prices by the great combinations which are in control of the principal sources of production.

Changes in the demand for mineral products may be greatly affected by the substitution of the use of one product for that of another. There are several conspicuous illustrations of the tendency to make such substitutions. These may be briefly described.

SUBSTITUTION OF PETROLEUM FOR COAL.

In the West, where coal is very high, several railroads, as the Southern Pacific and the Santa Fe, are equipping locomotives with oil burners. About three barrels of oil will furnish as much heat as one ton of coal. A considerable saving in the cost of fuel is attained by the use of oil, even at a price as high as $1.50 per barrel. Good steam coal in California costs about $7 per ton. The large supply of petroleum in Texas may be used in a similar way as a substitute for coal. In the South the coal operators are meeting the threatened invasion of the field of coal by procuring a reduction in coal freight rates to the centers of consumption where oil can be delivered cheaply.

Mr. Edward E. England, secretary of the chamber of commerce at Mobile, Ala., in his report of the coal trade for the United States Geological Survey, predicts that there will be a decrease in the coal

receipts of Mobile in 1901 which will more than offset the increase of 1900 over 1899, the tonnage of coal receipts for 1900 and 1899 being 274,970 and 189,300, respectively. This anticipated decrease will result from the satisfactory substitution of oil for coal. To meet the competition, coal railroads running into Mobile have reduced the freight rate from $1.75 to $1.10 per ton. Early in 1901 oil was placed in Mobile at 60 cents per barrel, which, allowing three barrels of oil to equal one ton of coal in heating value and taking the price of steam coal at that time ($2.85 per ton), shows a saving of $1 per ton in favor of oil.

Many furnaces for the manufacture of steel and for the reduction and distillation of zinc ores now use oil in place of coal for fuel.

The advantages of liquid or gaseous fuel, apart from cheapness, are: Easier and better control of heat concentration; more efficient utilization; freedom from large storage space; easier and cheaper transportation, and no ashes or residual products requiring handling.

SUBSTITUTION OF NATURAL GAS FOR COAL.

Natural gas is largely used for domestic purposes, as well as for metallurgical furnaces in the manufacture of steel, in treatment of zinc ores and products, in glass making, and in many other important fields—mining, metallurgical, and industrial.

The Eleventh Census estimated the production of natural gas in 1889 at 552,150,000,000 cubic feet. Assuming 30,000 cubic feet of natural gas to equal in heating power one ton of Pittsburg coal, this amount of gas should have displaced in heating value 18,450,000 tons of coal, while, as actually reported, it displaced approximately but 10,000,000 tons. This great wastefulness was characteristic of the consumption of natural gas in the early years of its use. Later, as the supply became less, greater care was taken in transporting and using it, and special burners were constructed which yielded a greater result for the gas burned. The amount of natural gas used in the United States is reported in the value of the coal it replaces. (See page 254.) Actual figures of production in cubic feet can not be obtained.

REPLACEMENT OF COAL BY PRODUCER GAS.

Consumption of gas in gas stoves and gas heaters has affected the tonnage of anthracite very largely in the past few years. This is evinced by the fact that while great advances have been made in nearly every other branch of the mineral industry, the production of anthracite coal during the past ten years has been practically stationary. Since the gas is produced from bituminous coal, the ultimate result is the replacement of anthracite coal by bituminous.

A number of industrial and metallurgical works are now using producer gas, which can be made from inferior grades of coal, or in some

cases from oil. A special instance of the substitution of producer gas or illuminating gas for coal is in cases where steam heating plants use gaseous fuel and coke, both supplied directly by gas companies.

CONSUMPTION OF COAL FOR ILLUMINATING PURPOSES.

It has been estimated that in 1899 there was sold in the United States 70,000,000,000 cubic feet of illuminating gas, of which 52,500,000,000 cubic feet was carburetted water gas. Illuminating gas is manufactured in two ways—the older method of direct distillation of special varieties of bituminous coal, and the more modern water-gas method in which anthracite or coke is used. The products of the latter process, carbon monoxide and hydrogen, themselves burn with intense heat, but with faint luminosity. To make the gas luminous it is laden or enriched with volatile hydrocarbon products, as crude petroleum.

In 1896 Mr. Walter Clark investigated the gas companies of the United States and found the processes in use divided as follows:

Processes in use in the gas works of the United States in 1896.

Coal gas (generally small)	418
Water gas	296
Water gas and coal gas mixed	116
Oil gas	108
Miscellaneous	13
Total	951
Total using water gas	412

At present (1901) it is safe to say that at least 500 gas companies produce water gas. The water-gas producers are at present somewhat startled at the increased cost of the petroleum products which they need to make the gas burn with a luminous flame, and a cheaper substitute is being sought. Owing to the great improvements in recent years in the design of coke ovens that save the by-products of bituminous coal distillation, i. e., gas and ammonium sulphate, the old-fashioned bituminous coal gas can now be manufactured at a much lower price than formerly, and if the high price of petroleum products continues, or if no cheaper substitute is found, the water-gas industry may be abandoned and a return made to the older coal-gas manufactures. Illuminating gas now feels the competition of electricity, sometimes produced, as at Buffalo, by water power. Buffalo consumption of illuminating gas also has been diminished in recent years by the piping of natural gas from Canada and from Pennsylvania.

SUBSTITUTION OF BITUMINOUS COAL FOR ANTHRACITE.

The replacement of anthracite by bituminous coal in the industrial and metallurgical field is best shown by a glance at the diagrammatic chart of the coal production in the United States (page 217). The

enormous development of the industries of the country calls for the use of the cheapest fuel. Hence the great increase of the bituminous product, while the annual production of anthracite has not increased to any great extent. The competitive commercial conditions are summarized in the following brief digest:

Commercial reasons for the substitution of bituminous coal for anthracite.

	Anthracite.	Bituminous.
Mining: cost	Greater, as seams are thicker, up to 30 feet.	Less; seams thinner and less expensive to support; use of coal-cutting machinery.
Handling in mines; cost.	Greater: generally by shafts down to 2,200 feet.	Less; many mines are drifted into by horizontal tunnels 700 to 800 feet, and those of shaft type are of less depth.
Pumping: cost	Greater, as below level of ground water.	Less, ranging down to nothing, as mines are generally above level of ground water.
Royalty	50 cents per ton	5 to 15 cents per ton.
Preparation	Includes expensive coal breaker, $80,000 to $100,000, and involves 10 to 15 per cent of waste.	Little or none, as much is sold "run of mine," in the condition in which it comes from the mine. If prepared, screening alone is necessary.
Freight rates	45 per cent of net value at tide water.	Flat rate; at present $1.40 per ton, flat, from mines east of a certain arbitrary line.

Since the average cost of producing bituminous coal is much less than that of anthracite, the consumption of the latter is naturally limited to those uses for which it is specially fitted by its nonsmoking combustion. Anthracite is becoming more and more an article for domestic consumption, while its former use under boilers and for manufacturing purposes has been largely supplanted by soft coal. The main objection to the use of bituminous coal in cities is the dense smoke given off by it. Such cities as Pittsburg and Cleveland have become notorious for the smoke-laden condition of their atmosphere. In larger cities, where the manufacturing interests do not occupy so prominent a position, local legislation has prevented the direct combustion of smoke-producing fuels, and while much soft coal is burned, it entails the use of some type of smoke-consuming apparatus.

In large office buildings, such as are constructed at the present time, bituminous coal, burned with smoke consumers, is substituted for anthracite for the production of steam with which the buildings are heated. This is commercially possible only in a large plant. Formerly individual offices were heated by stoves using anthracite.

While the production of anthracite will increase, it will not increase in any such proportion as that of bituminous coal. It has been estimated that at least for the next fifty years 20 per cent of the total production of coal in the United States will be anthracite, and at the present rate of consumption the anthracite fields in Pennsylvania will last from one hundred and fifty to two hundred years.

SUBSTITUTION OF COKE FOR COAL.

The Boston and Maine railroad is now using coke for locomotive boiler firing, buying its coke from the New England Gas Company which uses bituminous coal from Cape Breton, Nova Scotia. Fifty

locomotives now use coke, and 100 more are being adapted to the use of it. Coke is also used in place of coal in the manufacture of water gas.

As an additional instance of the replacement of coal by coke may be mentioned the fact that the H. C. Frick Coke Company, and other operators in the Connellsville region, are placing on the market a variety of product called "crushed coke," that is used mainly for domestic consumption in private dwellings. The coke is sized into various grades corresponding to the different sizes of coal.

The tendency to use coke in place of coal has been much increased by the introduction of by-product coke ovens. In the old beehive ovens, used for making coke for the iron and steel manufacture and other industrial purposes, the volatile constituents of the coal went to waste. The by-product oven, by saving these portions of the coal, greatly reduces the net cost of production of the coke. One thousand and eighty-five by-product coke ovens have been established in the United States, and an additional 1,096 are in course of construction. Connellsville coal contains 28 to 34 per cent of volatile constituents, and when coked yields by-products in the following amounts: 1 to 1.2 per cent ammonium sulphate, 3 to 3.5 per cent tar, 1.60 to 1.75 per cent benzol. The gas produced amounts to 8,000 cubic feet per ton of coal, half of which, or 4,000 cubic feet, is in excess of the amount necessary to generate the heat for the coking operation, and is available for revenue.

The statistics of coke ovens for 1900 are as follows:

By-product ovens built		1,085
By-product ovens building		1,096
Coke produced from by-product ovens	short tons	1,075,727
Total production of coke	do	20,533,348
Total number of ovens, by-product and beehive		58,484

II. MINING COMBINATIONS.

CONTROL OF THE SEVERAL MINING INDUSTRIES.

In all branches of the metal-producing industries the development of combinations or "trusts" has been conspicuous during recent years. As affecting the industries of the United States, the general tendency toward combinations is discussed in that part of this report exclusively devoted to industrial combinations. Directly concerning the mining and metallurgical industries, however, the leading facts regarding the existence of combinations in each branch are given in the following summary:

Gold.—This metal, being always of a standard value, does not extend to producers the advantage of control of price by a combination of interests, and, partly on this account, no trust or combination has been formed in this field.

Copper.—The Amalgamated Copper Company, capitalization $153,000,000, controls from 55 to 60 per cent of the United States production.

Silver and lead.—The American Smelting and Refining Company has recently affiliated with its one large competitor, the Guggenheim Smelting Company, the combined capitalization being $100,000,000. This consolidation practically includes all the silver-lead smelting interests in the United States, the exceptions being the Balbach Smelting and Refining Company at Newark, N. J., the Selby Smelting and Lead Company at San Francisco, Cal., the Puget Sound Reduction Company of Everett, Wash., and a plant at Tacoma, Wash.

Iron and steel.—The United States Steel Corporation, capitalized at $1,404,000,000, controls about 70 per cent of the iron and steel production. Its control extends to the mines as well as the furnaces and mills. The Crucible Steel Company of America is capitalized at $50,000,000, and the American Iron and Steel Works at $20,000,000. Among other large operators are the Pennsylvania Steel Company, Bethlehem Steel Company, Republic Iron and Steel Company, Colorado Fuel and Iron Company, and companies in the Southern States.

Zinc.—The Missouri and Kansas Zinc Miners' Association is in control of the large producers of ore. The United States Steel Corporation controls one-fifth of the total output of spelter in the United States. In September, 1900, options were secured on all but two of the Western zinc smelting plants.

Coal.—The principal consolidations in this branch of the mineral industry in the United States are: Morgan and Vanderbilt railroad interests; Pittsburg Coal Company,[1] capital $64,000,000; Monongahela River Consolidated Coal and Coke Company,[1] capital $30,000,000.

Petroleum.—The Standard Oil Company has practical control of the refining of petroleum in the United States and a considerable degree of control over the production of crude oil. There are consolidations projected to control the Texas and California fields, but many independent producers still operate in the West and South.

RAILROAD COMBINATION AND THE COAL INDUSTRY.

The subject of the combination of railroads in the mining and transportation of anthracite coal is discussed in connection with that part of the present report dealing with transportation.

The bituminous coal that is mined in certain districts of the United States meets in a high degree all the demands of the consumers. These districts are in central Pennsylvania, the Cumberland region in Maryland and Virginia, and along the Chesapeake and Ohio and Norfolk and Western railroads in Virginia and West Virginia. Some

[1] Now consolidated into one concern.

of this coal is of the coking variety and is well fitted for gas manufacture; most of it is well adapted for steam generation, and some of it is the best coal procurable for naval use. During 1899 and 1900 the Pennsylvania railroad acquired a controlling interest in the Baltimore and Ohio railroad, the Chesapeake and Ohio railroad, and the Norfolk and Western railroad. This movement, which brought these four great coal-carrying roads under one control, was quickly followed by an increase in the freight rates from the mines to tidewater and an assignment of a definite sphere of operation to each of the four roads in the distribution of the product. These railroads unlike anthracite roads, do not operate mines in any large way. Strong efforts were made to establish foreign trade by locating agents at foreign points and by providing adequate shipping facilities for deep-water vessels on this side. The railroads and mine owners have received advantage by ending the rate cutting which so long prevailed, and which often resulted in freight rates wholly unremunerative to the railroads, and by, to a considerable extent, abolishing the competition of different coals in the same market, which caused low prices and unsatisfactory returns to the mine owners. The producers have not been satisfied with the car supply, and it is a question whether the public has been benefited. Since this consolidation, however, the price of bituminous coal has been advanced, at least in some instances, 50 cents per ton above the average for 1899.

In the Pittsburg region important consolidations of operators directly concerned in mining, as distinguished from railroad companies, were made in 1899. The Pittsburg Coal Company, capitalized at $64,000,000 (one-half preferred and one-half common stock), was formed to further the interests of those operators shipping by rail, embracing 104 concerns. The Monongahela River Consolidated Coal and Coke Company, capitalized at $30,000,000 (one-third bonds, one-third preferred stock, and one-third common stock), was formed to further the interests of those operators shipping by water. As in other instances, the result of abolishing disastrous competition has been shown in increased prices for the products. These two companies began operations in 1899, and shortly after, the price of 1¼-inch coal was raised from 85 cents per ton at the mines to $1.25, and the price of 1¼-inch screened coal delivered at Pittsburg was raised from 95 cents per ton to $1.30. The two companies are now under one control.

COPPER AND THE AMALGAMATED COMPANY.

The uses of copper in the industries have always been very large. For a long time it was extensively used for sheathing ships, but in recent years steel has been largely substituted for this purpose. It continues in demand for roofing and gutters and for domestic and lab-

oratory utensils. Its largest use has been and is in the manufacture of brass, and thus it enters into so many articles of utility and ornament, such as builders' hardware, steam fittings, gas and electric fixtures, plumbers' supplies, bedsteads, clock and watch works, bronzes, balustrades, ordnance and equipment, that it may be regarded as both a necessity and a luxury, the demand for which grows as wealth increases. The great development of electricity in recent years and its continual increase has added very largely to the demand for copper, chiefly on account of its conductivity, and it is not likely that any cheaper material can be substituted with satisfaction.

INCREASE IN PRICES—PRINCIPAL MINES.

While the price of copper has more than doubled during the last four years, the annual increase in production has averaged less than 10 per cent. Naturally this fact has caused activity in seeking new mines and making greater development of those already worked, while of course the stocks of many new companies have been brought very prominently before the public. Nevertheless, not more than two new mines—the Highland Boy and the Bingham—have added considerably to the copper supply during the last five years, and even their production is not to be compared with that of the world's large mines. There has been, however, owing to the recent high price of copper, an appreciable addition to the supply from prospecting. Prospectors find small deposits, and the custom ore which they turn in to the smelters yields them at least good wages and enables them to continue the work of discovering. This enterprise has given employment to a considerable number of men, and it has been due entirely to the remunerative price. When copper brought but 12 cents a pound there was little or none of this industry.

The fact is so well known that it hardly need be mentioned here that the great mines are in Michigan, Montana, and Arizona. The product of the Michigan mines is known as lake copper, and that of the others as electrolytic, the former because the mines are located on the shore of Lake Superior and the latter because electricity is employed to separate the copper from gold and silver which are found in the same ores. The largest of the Michigan mines is the Calumet and Hecla, and the story of its wonderful richness reads like an Aladdin's tale. The stock of this mine, as of many others in the lake group, is mostly owned in Massachusetts.

DIFFERENCE IN MINING LAWS.

There is a striking difference in the mining laws between Michigan and Montana, out of which have grown results which are so little understood that a brief explanation seems appropriate here. In Michigan a

mining claim is defined by the square feet of the surface, and the owne must keep within those lines, no matter how deep he may go or whic way the veins may lead.

But in Montana there are what are called "extra-lateral rights." I the apex of a vein is found within a miner's claim he may follow th vein to any extent by keeping within the end lines of his claim. Thi lateral extension gives rise to conflicting claims among the differen owners of the surface, and there have been innumerable lawsuits t determine whether the vein apexes are within one claim or another The litigation has been fierce and not unattended with judicial scandals while development has been arrested, wages lost, and profits sacrificed

FORMATION OF THE AMALGAMATED COMPANY.

Chiefly for the purpose of overcoming these difficulties the Amal gamated Copper Company was formed early in 1899, and there wa such confidence in its organizers that the stock was oversubscribed about fourfold. It was capitalized at $75,000,000, but during the year 1901, for the purpose of acquiring additional properties, its capital was increased to about $153,000,000. It seems to have been the policy of the management not to acquaint the public with its accounts or purposes, which may have been due to the pendency of negotiations and to the peculiar conditions of the properties acquired in Montana. That this has led to much misconception admits of little doubt, and yet it may have been temporarily expedient.

"The Amalgamated," as it is commonly spoken of, controls the output of the Anaconda Copper Company, the Butte and Boston Company, the Boston and Montana Company, the Colorado Smelting and Refining Company, the Parrot Company, and the Washoe group of mines. The mines of these companies are all located in one hill in the city of Butte, Mont. The copper interests of the Amalgamated Copper Company are entirely restricted to this group of mines. It neither owns nor directly or indirectly controls mines in any other State or Territory.

Because the company has effected a consolidation of control it has been called "the copper trust," although its control is restricted as above set forth; and because it has refused to cut the price of its store of copper when demand has slackened, and has curtailed production for the same reason, it has been likened to the Secretan copper speculation of a few years ago, which undertook to corner the world's supply and disastrously failed. Examination, however, shows little or no parallel, as the French combination was wholly a deal in copper, while the Amalgamated is a producing company which professedly is endeavoring to place the industry in Montana on a good business basis. It has not attempted to control the world's supply, and it comes far

short of being a monopoly, as it produces only about 40 per cent of the copper output in the United States.

The French syndicate ran the price of copper up to 17¼ cents a pound, but after its failure the price fell to about 10 cents, which is said to have been much below the cost of production. When the Amalgamated was formed the price was 12 cents, and it is asserted by men in the business that not more than three companies in the United States can profitably produce copper at that price. The price until December, 1901, was 16⅝ for electrolytic and 17 for lake. This was an increase of about 33 per cent over the price during the last business depression, and many believed that it was unnaturally high.

ACCUMULATION OF STOCK.

There was a popular impression that Amalgamated or its constituent companies carried a larger supply of copper in December, 1901, than the markets of the world contained in recent years. Careful inquiry proves this to be a mistake. The stock of "G. M. B's" (good merchantable brands) was then smaller in the London market than statistics had ever shown before, being only about 12,000 tons, while the average for the past ten years exceeded 50,000 tons. At the time of the Secretan speculation it reached 150,000 tons. This store is the stock of speculative copper. It is generally pig, and before being used in industries must be refined. The market for G. M. B's is very largely manipulated by the smelters in England and on the Continent. They often sell short in the market to reduce the price, because upon the price of G. M. B's is based the price which they have to pay for their ores. The price of refined copper in London averages £10 per ton higher than the quotations for G. M. B's and it is usually only a fraction of a cent different from the price ruling in New York.

Formerly consumers purchased their supplies of copper mostly from middlemen, generally buying for future delivery. During the year 1901 this custom was radically changed. The middleman seems to have disappeared, and the copper produced in the United States is now sold by the producers to the consumers chiefly through the United Metals Selling Company. Therefore the stock heretofore carried by middlemen must now be carried by either the producer or the consumer. Since the consumer buys as he needs the copper, the producer carries most of the supply. With this exception there has been no change in the copper trade. Production has increased but little in the last two years, but consumption in Europe has heavily fallen off, owing to financial stress on the Continent and the overloading of electrical companies with the securities of enterprises in their line. Exports during the calendar year 1901 fell off 65,000 tons, as compared with 1900, but they were unusually large that year, to replenish stocks that became depleted after the price was advanced the previous year.

In October, 1901, the quantity in store, chiefly held by the Amalgamated, was estimated by experts at about 135,000 tons. The Calumet and Hecla was reported to have sold freely at slight concessions, but the market price held steadily, and the Amalgamated refused frequent offers a little under the market. Their ability to carry even a much larger store was not questioned, and though they generally maintained reticence, they insisted that the glut was wholly due to abnormal and temporary causes. Considering that after pig copper has been produced in the West at least three months must be allowed for its transportation and refining before it enters the Eastern market, and in view of the expected improvement in Europe, the present accumulation can hardly be called excessive or dangerous or speculative, and if prosperity continues here and is fully revived in Europe the store may be found insufficient to meet the demands. Whether or not the transfer of holdings from middlemen to producers is a public benefit remains to be seen, but if consumers have any fears of oppression it would seem that they can protect themselves by carrying more of the store, which they are sure to need.

CUTS IN PRICE AND EFFECT ON STOCKS.

Early in December, 1901, it became apparent that without an agreement between large producers the price could not be maintained, and it was generally believed that all of them were making sales either at concessions from quoted prices or with guarantees of rebates should the price fall within a given time. The prices of the shares in all the American companies declined rapidly. Amalgamated, which had been as high as 130 six months before, fell to 60, but soon rallied, and, after the declaration of a quarterly dividend of 1 per cent, gradually advanced to 70. For some reason not stated, that company announced a cut in the price of copper to 12 cents. There were no sales by any of the companies at this price and it was regarded as a coup in the game of desperate competition, either to put a stop to the smaller cuts which others were making or to force consolidations or binding agreements as to output and price. Many millions in the aggregate were lost by investors in the stocks. The shrinkage in value of the 134,000,000 pounds of copper in the hands of producers, caused by the fall in price from 17 to 13 cents, at which actual sales were made, was $5,376,000. The annual production of the mines controlled by the Amalgamated, under normal conditions, is stated at about 336,000,000 pounds. The fall in price on this quantity, if continued, would equal a loss of $13,440,000, which approximates 8 per cent on its capital. It is obvious that smaller producers must have suffered more in proportion.

On the 2d of January, 1902, the United States circuit court in Montana dissolved the injunction of the local court which had restrained the Boston and Montana company from paying its dividend to the

Amalgamated, and the stock of the latter further advanced. The end of the uncertainty and conflict is not clearly in sight, but conditions in Europe have improved and there are indications that a reasonable price can be established and full production soon resumed.

THE LESSON OF THE INCIDENT.

Different conclusions are drawn from this history, according to the points of view of those who draw them. One opinion is that it teaches the futility of attempting to fix or maintain a price in the face of a greatly diminished demand, even though the decline is believed to be temporary. Another opinion is that such a fluctuation emphasizes the importance of perfecting means of control so that steadiness of price of both the product and the shares can be preserved, even though it be a higher price than might result from unrestrained competition. In whichever direction lies the true policy, it seems to the Industrial Commission that when the great supplies of nature come under the operation of gigantic forces, in adapting them to the uses of man, the best good of all legitimate interests requires publicity of resources and methods and such governmental supervision as may tend to preserve an equilibrium and prevent demoralization and disaster.

III. THE TECHNICAL ADVANCE OF THE MINING INDUSTRIES.

SUMMARY OF MECHANICAL APPLIANCES AS SUBSTITUTES FOR HAND LABOR.

The development of mechanical appliances, as substitutes for hand labor in the mining industry may be briefly summarized as follows:

In mines: Power	Compressed air or steam drills.
	Mechanical haulage:
	Pneumatic system.
	Endless rope.
	Tail rope.
	Horse or mule power.
	Electric trolleys.
	Automatic hauling and dumping by utilizing gravity.
	Drainage—Pumps operated by steam or compressed air
	Gravity drainage through tunnels at lower levels.
(a) Machines for cutting grooves. Excavating machines	Mechanical picks, chisels, gouges.
	Traveling jumpers and rock drills.
	Circular saws.
	Wire saws.
	Endless chain with attached cutter.
	Revolving toothed bar.

(b) Machines for excavating complete tunnel.

- HOISTING OR WINDING: Windlass, capstan, or drum, operated by ..
  - Man or horse power.
  - Water-wheel power.
  - Steam power.
  - Compressed-air power.
  - Oil or gas engine power.
  - Electric power.
- TRANSPORTATION ABOVE GROUND.....
  - Shoots.
  - Pipes.
  - Sledges.
  - Wheeled conveyances.
  - Boats.
  - Aerial rope ways..
    - Single rope.
    - Endless rope.
    - Endless rope and supporting rope
    - Double endless traveling rope or cl
    - Telpherage line.
- DRAINAGE .....
  - Dams.
  - Tunnels.
  - Siphons.
  - Winding machinery.
  - Pumps.. (Lifting . / Force ..) operated by motors..
    - Air.
    - Water.
    - Steam.
    - Gas or oil gines.
    - Electric.
- Surface workings above ground.
  - Water under heavy pressure..
    - Hydraulic mining of g ores.
    - Hydraulic treatment phosphate deposits.
    - Hydraulic treatment manganese ores.
    - Hydraulic treatment gem deposits.
  - Steam shovels, soft iron ore deposits.
- Surface workings below water.
  - Spoon dredges .....
  - Crab dredges.....
  - Endless-chain dredges .....
  - Centrifugal pumps.....

  } For gold ores a phosphate d posits.
- CONVEYANCE OF MINED ORE TO BINS OR CARS.
  - Industrial railways.
  - Gravity loading of bins.
  - Gravity loading of cars or vessels.
  - Overhead crane and buckets to unload cars or vesse to stock pile or bins.
  - Mechanical unloader, crab—coal.
  - iron ore.
  - Mechanical dumping or tipping of entire car—coal.
- CONVEYANCE OF ORE, FLUX, AND FUEL AT FURNACE.
  - Mechanical conveyors.
  - Chain type.
  - Screw type.
  - Endless-belt type.
- CHARGING FURNACE .....
  - Mechanical furnace chargers.
  - Blast furnace for iron.
  - Shaft furnace for copper.
  - Shaft furnace for lead.

REMOVAL OF FURNACE PRODUCTS.	(*a*) Molten metal: Mechanical casting machines—cast iron. Immense ladle to convey molten pig iron to the mixer, a vessel in which successive charges from the blast furnace are held in a molten condition until needed for the Bessemer converter. Copper molds arranged on revolving apparatus or on chain conveyors. (*b*) Solidified metal: Removal of pig iron in large quantities by overhead crane. Formerly each individual pig was separated from the sow and hand moved. (*c*) Molten slag: Granulated in water under heavy pressure and removed by outflowing stream or by a separate mechanical conveyor. Caught and conveyed to dumps in large pots of 7-ton capacity, and hauled by horse, steam-locomotive, or electric-trolley power. Formerly caught in small pots and hauled by hand to dump.
ROASTING FURNACES FOR COPPER, GOLD, OR SILVER ORES.	Mechanical charging of ore to furnace. Mechanical passage of ore through furnace. Mechanical discharge of ore from furnace.
LEACHING GOLD AND SILVER ORES OR MILL TAILINGS.	Crushed material handled in immense vats up to 1,400 tons capacity and greater. Industrial railways—elevators. Water power to remove leached products. Utilization of gravity for transport of material.
COAL	Mechanical screens or trommels. Gravity at tipple and bins.

IMPROVEMENTS IN MINING METHODS.

The actual work of mining ore and minerals and carrying them to the surface for treatment has been greatly improved during recent years. The reduction in costs which has been rendered possible by these mechanical improvements has permitted operation of mines which were hitherto unprofitable, and has made the business of mining a much more stable one than in earlier days. Without attempt to describe in detail the innumerable improvements in methods of mining, the following summary may be presented, showing the leading factors that have contributed to the cheapening of production of ores and minerals:

1. Improved methods of excavating and cutting, which have made possible the production of larger quantities for a given expenditure of labor and money. One of the most conspicuous improvements of this sort is the use of undercutting machines in bituminous coal mining, which is rapidly increasing.

According to the Annual Report of the United States Geological Survey, the production of coal in the United States in 1900 amounted

to 269,064,281 short tons. Of this enormous output 52,790,523 tons or 25.25 per cent of the total bituminous product, was undercut by machines. While the bituminous output in 1900 increased a little less than 9 per cent, the machine-cut product increased over 20 per cent.

The progress made in the last few years in the development of the use of undercutting machines in the United States has attracted more attention than any other single fact connected with the coal-mining industry. One of the interesting features in connection with the use of mining machines in 1900 was the fight made against their continued use in the mines of Illinois by the Mine Workers' Union, which resulted in a decrease of 1,000,000 tons in the machine-mined product from that State. In 1900 there were 323 concerns in the United States using 3,907 coal-cutting machines.

(2) Improved methods of mechanical haulage, as pneumatic haulage, endless-rope and tail-rope systems. Following this line, better grading has been done, heavier rails and larger ties have been used, and better equipment generally has resulted. Increased loads have been carried at higher speeds, which materially reduces the haulage cost per ton and has more than compensated for the increased length of haul, due to the extension of the mine workings from the shaft or pit mouth. In coal mining, especially, reduced cost of haulage and of track maintenance has been obtained by concentrating the workings in many cases.

(3) Improved methods of mechanical handling of material, as the utilization of gravity to aid in the haulage of loaded and empty cars at the shafts and the introduction of automatic dumping appliances on the tipple.

(4) Improved methods of mine drainage by proper concentration of workings, by increased size of pumps, and by the substitution of compressed air for steam at points in the mine remote from the power plant.

(5) Improved methods of haulage above ground by the substitution of steam locomotives, electric trolleys, or endless gravity rope appliances for mule or horsepower for the conveyance of ore or material from bins to furnace or ovens.

The general conditions of the precious metal mining industries, as stated by representatives of mines and smelters of Colorado, Utah, and Idaho before the Industrial Commission, are highly prosperous. The general opinion is that mining is becoming more and more a definite and safe business and less and less speculative. Although it is still more hazardous than manufacturing, if successful the return is greater. The possibility of profitable mining has resulted largely from great improvements in methods of mining and in the treatment of the ores, particularly in the latter. It is stated that silver mines in Utah are yielding a greater profit with silver at a market price of 60 cents per ounce than when it was at 90 cents. The improvement in smelting,

concentration, and mining machinery in the West has benefited alike the mine owner, the smelter, and the laborer. Notwithstanding the saving in labor per unit of product as the result of these improvements, they have apparently resulted in an increase in the number of miners employed, because many mines are now operated which could not be properly conducted without the aid of machinery. Furthermore, the use of machinery renders it possible to produce more wealth with a given amount of labor than formerly, which justifies a reduction of the hours of labor. The reduction of hours in Utah to eight per day, under the constitutional provision in that State, is an instance in point. In silver mining, generally speaking, wages have increased materially during the past few decades. The increase is due in part to labor organizations and in part to improvements in machinery. Mechanical roasting furnaces have displaced hand labor, yet by the use of them the demand for mining labor has increased, and, on the whole, has resulted in the employment of more labor.

CONCENTRATION.

As applied to the treatment of ores the term "concentration" is used in a broad sense to include all processes, excluding furnace methods, whereby the metallic or valuable constituent is raised to a higher percentage. This result may be accomplished in a great variety of ways, ranging from the simple treatment of hand hammering, in which the sterile portion or gangue of the ore is broken off and removed, leaving the remaining material richer in metal, to the complex operation in which the crushed ore is separated into a number of products by water treatment under the influence of gravity. These products range from the most sterile or worthless material to the purified or concentrated ore, often with intermediate products of varied richness. Ore enrichment or concentration renders many ores, otherwise too poor to make treatment profitable, available for industrial use, and is an important factor in modern mining development. With the exception of iron ores (and even here there are some magnetic ores that are concentrated before furnace treatment), all the more important metallic ores require concentration under some conditions.

The following is a simple classification of the operations employed for concentrating ores:

Mechanical processes:

1. Washing with water to separate sand, clay, or mud; applicable to ores of gold or lead.

2. Hand sorting in the mine or at the surface; used with nearly all ores excepting soft ores of iron.

3. Breaking up, subdividing, or shaping; used for nearly all ores.

4. Screening or sifting, classification as to size, by hand, machine, or trommel.

In breaking up the ore, hand work has now been supplanted to large extent by machines, which perform the work with a great savin of time and labor. These machines are: Crushers or jaw breakers stamps operated by gravity or by steam, rolls, mills, edge runners ball grinders, disintegrators, conical grinders and breakers, pneumati pulverizers, and miscellaneous pulverizers.

Processes depending upon physical properties:

1. Motion in water, employed in jigs, separators, plane tables traveling belts, and buddles.

2. Motion in air, employed in pneumatic jigs, fans, and centrifugal concentrators.

3. Magnetic concentrators, endless belts, rolls, or deflectors.

The various machines mentioned above for the concentration treatment are used for the different ores as outlined in the following paragraphs.

APPLICATION OF CONCENTRATING METHODS TO THE MORE IMPORTANT ORES.

Gold.—The extraction of gold from simple sand or gravel is accomplished by mere washing, or by washing combined with amalgamation, as exemplified in hydraulic mining. When the gold is contained in hard rock, as quartz or conglomerate, it is crushed and stamped, the gold being caught by the mercury in the passage of the pulp and water over amalgamated copper plates. Sometimes mercury is also added in the battery to catch the coarse gold at once. The pulp leaving the amalgamated plates generally contains pyrites or other heavy metallic sulphides carrying gold, which is subsequently collected by some type of concentrator and treated with profit. There are many gold and silver mines now operated successfully which depend for profit upon the value of the precious metals in the concentrates. If these concentrates were not saved, the precious metals obtained by direct amalgamation alone would not be sufficient to pay the costs of treatment.

Silver.—Silver ores may be divided into two classes: (1) Silver ores proper, and (2) argentiferous lead or copper ores.

1. Many of the silver minerals are too friable to admit of wet-dressing processes, and their preparation is generally limited to crushing, hand picking, and cobbing.

2. Ores of this class may be concentrated by the ordinary processes for lead or copper ores, unless the proportion of friable silver mineral is too large.

Copper.—The principal ores of copper are:

(1) Metallic copper (as at Lake Superior); (2) copper oxide ores (rare occurrence, mainly in Arizona); (3) copper sulphide ores (as at Butte, Mont.; Colorado, Utah, California, and in the Eastern and Southern States).

1. The ores of metallic copper in the Lake Superior region are of varying richness, and while large masses of pure metallic copper frequently occur, the general average of copper content is quite small. The Calumet and Hecla mine averages from 2 to 3 per cent metallic copper, while at the Atlantic mine the average copper content is as low as from 0.6 to 0.75 per cent. Without a method of enrichment by concentration the cost of treating these ores directly in furnaces or by chemicals would be absolutely prohibitive.

The concentration process as used in the Lake Superior region consists in crushing the ore by steam stamps (some stamp heads having a capacity of 400 tons of ore per twenty-four hours), the crushed material being treated by jigs, round tables, and belt concentrators, which yield enriched products varying in copper content up to 80 or 90 per cent.

2. Copper oxide ores: The oxide ores of Arizona are of greater richness (10 to 20 per cent copper) than the metallic ores of Lake Superior; yet their friability precludes washing and water treatment, as much of the valuable material would be carried away with the outflowing water and lost. These ores are limited in occurrence, generally appearing in the topmost layers of the mineral deposit, and as the mine deepens they are replaced by sulphide ores. When the oxide ores are obtained in sufficient quantities for treatment, they are reduced to metallic copper direct in the furnace, or are added to the charge of sulphide ores in the regular smelting treatment, which yields from the furnace a copper matte (a sulphide of copper and iron) subsequently treated in a Bessemer converter for metallic copper product.

3. Copper sulphide ores: The copper sulphide ores at Butte now average 2½ to 3 per cent copper, and are enriched by mechanical concentration by water. Occasionally, however, the ore is of sufficient richness to treat direct in the furnace. Ordinarily the ore is hand picked, crushed in rolls, the coarse material jigged, and the fine product treated first by buddles and later by belt or table concentrators. The copper content of the concentrators runs as high as 20 per cent.

The richness of the copper ores of the United States is diminishing with increased depths. At Butte the ores now average but 2½ to 3 per cent copper. This is not an unmixed evil, as better technical management is called into play to maintain profitable treatment. The same tendency toward lower averages is shown in the older Arizona districts and in California, as well also as at Trail, Canada. The principal producers

of copper in the United States, with few exceptions, are becoming more and more dependent for successful operation upon the treatment of immense quantities of low-grade ores, which entails increased cost.

Lead.—In some mines the galena ore is so pure that it merely requires washing to prepare it for sale or for the smelter. In the larger number of cases, however, the mineral is first submitted to a preliminary concentration treatment, which consists of crushing, sizing, and jigging. This is particularly noticeable at Joplin, Mo., where the lead ore (galena=lead sulphide) occurs with zinc ore (sphalerite=zinc sulphide). These two minerals, each objectionable to the other in their subsequent furnace treatment, are separated by water concentration in jigs into products which can be directly smelted for the contained metal.

Iron ores.—These ores generally occur in such quantities and of such richness as to admit of direct furnace treatment. In the case of magnetites, however, a previous concentration by magnetic separators or by washing and jigging is sometimes employed to enrich the ore.

METAL EXTRACTION.

The development of furnace methods for the extraction of metals has progressed to a remarkable degree, especially during the past few decades. There is not a single branch of the metallurgical treatment of ores that has not been benefited commercially by the application of scientific and business principles. When the enormous increase in the production of metals is considered, one realizes that the methods of extraction must have advanced at a corresponding rate. In general it may be said that in progress in metallurgical treatment of ores, be they gold, silver, copper, lead, or iron, the United States leads the world. Exception might be made as regards the cyanide treatment of ores in South Africa and in Australia, but even in these countries much of the progress has been due to the efforts of American engineers and others of American training. A comparison of the conditions of a few years ago and of to-day will serve to illustrate the great development that has been made in this country. In general it may be said that the improvement in metal extraction has resulted from the untiring energy, inventive genius, technical skill, scientific training, and special utility of American metallurgists and engineers, many of whom by their exceptional qualifications have surmounted difficulties that would have been insurmountable to others hampered by precedent or by conservatism.

GOLD.

Gold washing methods have been greatly improved in recent decades. The crude hand treatment of the ore by the pan, cradle, or "Tom" has

been supplanted by hydraulic mining on a large scale. Mountains are now removed by water under high pressure, the outflowing stream of water and auriferous gravel or sand passing through tunnels and sluices which contain riffles on the bottom to collect the heavier gold particles as they settle by gravity from the flowing stream. Quicksilver is often used to aid in the collection of the gold, its well-known affinity for gold being utilized to collect the smaller particles of the precious metal that would otherwise pass to waste in the outflowing stream of water. Entire rivers have been turned from their courses in order to treat the gold-bearing sands in their beds, and while millions of dollars have been spent in accomplishing these immense engineering feats, the operations have been successful financially on material containing but a few cents in gold value per cubic yard.

There have been rapid advances in recent years in breakers, rolls, stamp mills, mechanical feeders, amalgamating plates, amalgamation in the mortar, the use of chemicals to prevent loss of gold and quicksilver, and above all, in the case of silver-gold ores, in the use of concentrating devices to save the precious metals locked up in heavy sulphide minerals which escape direct amalgamation. By the saving of this valuable product many mines are operated at a profit which otherwise could be run only at a loss.

Chemical methods of gold extraction.—Among the chemical methods of gold extraction are included especially the cyanide and the chlorination processes.

The chlorination process is based on the action of chlorine on gold, forming a soluble gold chloride, which is extracted by leaching the ore with water. The gold is precipitated from the solution, generally by ferrous sulphate (copperas), charcoal, or hydrogen sulphide. This process was proposed in 1848 by Plattner, and introduced into California in 1818, since which time it has undergone various improvements. It is still employed for ores, especially pyritic ores containing fine gold, that do not readily yield the precious metal by amalgamation.

The cyanide process was proposed in 1890 by Messrs. MacArthur and Forrest, and is based upon the solubility of gold in extremely weak solutions of potassium cyanide, from which it is subsequently obtained by precipitation with metallic zinc or by electrolytic deposition. This process is applied either to the crushed ore direct (sometimes preceded by a roasting treatment) or to tailings which have passed through the milling and amalgamation process. These tailings still contain a small amount of gold per ton of material, sufficient to yield a handsome profit when the material is treated in large quantities. The development of this process has been one of the most important factors in the enormous increase of the gold production of the world during the past decade. It has been largely applied to the treatment of mill tailings in South Africa and Australia, and to many ores and

tailings in the United States and elsewhere. As an adjunct to the milling and amalgamation process, its value is incalculable. Apart from the chemical principles involved, its development has mainly been in the mechanical handling of the material. Conveyors bring the material from the mill and dump it into immense steel or cement vats (sometimes of 1,400 tons capacity each), in which the chemical extraction of the gold is accomplished. The removal of the leached product in like manner has been best accomplished by mechanical devices, as special conveyors, or sometimes by a stream of water, which washes the spent ore through exit doors in the bottom or sides of the tank.

Furnace methods of gold extraction.—Under this division belong the various methods of smelting copper and lead ores often containing gold and silver to which have been added gold-bearing ores that may contain silver and base metal as well. Smelting methods yield the greatest amount of the gold and silver contained in the ores, and particularly in the case of gold, on account of the high value, it is sometimes preferable to treat them by smelting with ores of lead or copper, although they may be amenable to treatment by amalgamation or leaching processes. The advance in the methods of gold extraction by smelting can be properly referred to the sections below on copper smelting and lead smelting.

COPPER.

The advance in the various branches of copper metallurgy is summarized as follows:

Ore roasting.—In heaps: Formerly of few tons capacity, now of 250 tons and more, with great saving in labor by use of tramways to handle material; also saving in fuel cost.

Stalls: This older expensive method has been supplanted by cheaper and more efficient furnaces.

Furnaces: Old style hand furnaces of limited capacity have for the most part been superseded by mechanical furnaces that are automatic in action. As a result a large output per furnace has been obtained with a great economy in labor cost per ton. The ore in granular form is fed to the furnace automatically, passed through it automatically, either by gravity or by moving plows, and discharged automatically. These furnaces are of many types, the principles employed being classified as follows:

Multiple hearths—rectangular or circular, one over another: Material is passed through by plows attached to endless chains, or to revolving arms attached to center shaft.

Revolving cylinders: Material is passed through either by direct inclination of cylinder which rotates, or, if cylinder be horizontal, material is charged and discharged by gravity through doors at top or

bottom. Its movement in the furnace during roasting is accomplished by the rotation of the cylinder.

Ore smelting.—Reverberatory furnaces; fusion furnaces: Progress is typified by the increased size, from those of a few tons capacity twenty years ago to 50 or more tons at the present time.

Factors of progress: Mechanical charging, better adjustment of charge, better removal and settling of outflowing slag, the use of slack coal with forced draft, better settling of escaping dust, better refractory materials, the utilization of waste heat to warm incoming air, or, in some furnaces, to produce steam direct, better methods of tapping outflowing matte, and mechanical casting machines in refining furnaces, are all important improvements in the smelting of copper which have considerably lowered the cost of production.

Shaft furnaces: In no other branch of smelting has the improvement over old methods been so marked as in this field. From small brick furnaces of a very limited capacity (a few tons only) the step to the water-cooled furnace of iron which can smelt nearly 500 tons of ore daily is indeed a very great one. Among the points of particular improvement should be mentioned the following:

1. Mechanical handling of ore and products. The same improvements are used in handling copper as lead (see below).

2. Replacement of fragile and costly refractory brick lining and exterior mason work by iron and steel jackets, water cooled, which has resulted in great economy in repairs.

3. Use of movable forehearth for the collection and separation of molten products, matte, and slag.

4. Removal of slag by large pots moved to the dump by horse or locomotive power in place of small pots hauled by hand.

5. Better adjustment of charge, which has given a greater yield of metal with less loss of metal in slag. In this way also diminished amount of fuel is required.

6. The above-mentioned results have been aided by better control of blast, and in some instances by the utilization of waste heat to warm the blast—heat absorbed from the warm water of the jackets or contained in the molten slag.

Improvements have also been made in processes for separating the precious metals—gold and silver—from copper and lead, as well as from each other, as outlined below:

1. Electrolytic separation of gold from silver—Moebius process.

2. Electrolytic refining of copper, involving the separation of gold and silver.

3. Zinc desilverization of lead—Park's process.

4. Electrolytic refining of gold.

5. Acid parting of gold and silver.

6. Acid refining of gold.

LEAD.

In the smelting of lead ores practically the entire product is made by furnace treatment, in which the advance made by American metallurgists in the past few decades has been most marked. Mechanically, the greatest progress in furnace treatment has been in the handling of material in large quantities, by the use of automatic samplers, conveyors, and mechanical chargers (in a few instances where the composition of the ore charge is fairly uniform), as well as by removal of slag by water granulation with outflow of stream or separate mechanical conveyors, etc.

The smelting process has been developed to a high degree and is briefly summarized as follows:

1. Roasting furnaces: In the roasting furnaces the output has been largely increased and the time of roasting appreciably diminished. In special instances the older hand-operated furnaces have been replaced by automatic mechanical furnaces, with resultant increase in capacity and diminished labor cost per ton of ore treated.

2. In the smelting furnaces a great advance has been made over the practice of even a few years ago. The furnaces have been enlarged in size, and the amount of ore treated per furnace has been increased from 10 or 12 tons to beyond 200 tons. The excellent results now obtained have been due to the following factors:

Wider limits of charge, so adjusted as to include other ores, notably those containing silver in amount too small for profitable extraction by other means. Nearly 90 per cent of the lead now produced in the United States is used as a collecting agent for silver.

Better adjustment of material composing the charge, by which a higher per cent of metal is extracted, and less loss is incurred in flue dust and waste slag. This is also aided by the proper form of the furnace and the manner of operating, i. e., temperature, blast pressure, etc.

Diminution of amount of fuel required per ton of charge treated; hence lessened cost of fuel and labor.

In the lead desilverizing and refining processes also great improvements have been made in the past twenty-five years.

IRON AND STEEL.

The progress that has been made in the iron and steel industry of the United States during the last quarter of the century just closed is enormous. The great advance in the betterment of the human race has, in no small degree, been made possible by the production of vast quantities of cheap iron and steel.

A comparison of the production of iron and steel in the United States in the years 1840 and in 1900 shows the advance that has been made in methods of mining as well as in the treatment of the ore. In 1840 there was produced from 804 small furnaces 256,100 long tons

of pig iron. In 1900 the output from 223 furnaces was 13,789,242 long tons.

The introduction of the Bessemer process in 1864 and of the open-hearth process in 1868 secured the cheap manufacture of pig iron into steel products, and with this possibility the cheapening of the cost of pig iron was a natural consequence—results only obtainable by the highest efficiency in the many branches of applied science which are directly connected with the industry. The application of the laws of chemistry and physics, together with progress in mechanics, has rendered possible the use and combination of ores, fluxes, and fuels to yield enormous outputs per furnace. The old furnaces of a few tons' capacity per day have now been supplanted by gigantic structures of steel-bound and supported brickwork, some of which yield individually 700 tons or more of pig iron in twenty-four hours. To do this involves the mechanical handling per day of approximately 1,400 tons of ore, 1,200 tons of fuel, and 500 tons of flux, a total of 3,100 tons; and if run at this rate for the year the total consumption of material for one furnace would amount to 1,131,500 tons. This enormous amount of material is almost entirely handled by mechanical devices. The ore, flux, and fuel are dumped by gravity from the cars to the stock pile or bins (in the former case being transferred later by bucket and crane to bins), thence elevated to the furnace top, and automatically charged into the furnace. In a similar manner the products flowing from the furnace are handled mechanically. The pig iron is tapped directly to ladles and transferred in molten condition to a "mixer," where it is held until needed for the Bessemer steel process; or, if required in the form of pigs the old laborious hand method of shaping a mold for each pig in the sand has been replaced in several instances by a number of molds on an endless belt operated mechanically. Likewise the slag is handled in a molten condition by running it direct as it flows from the furnace into ladles of large capacity, 7 tons or more.

In a similar manner the Bessemer and open-hearth processes have been developed. In the former the converters of 15 tons capacity now transform pig iron into steel in the short space of a few minutes, while the open-hearth furnace for steel has had its capacity increased to 50-ton charges. Without the aid of mechanical devices, as outlined in the beginning of this section, the cost of handling these immense outputs would have been prohibitive, and the present standing of the industry unattainable. It is now possible to have the raw ore that has been charged into the blast furnace smelted into pig iron, thence Bessemerized into steel ingots, and finally transformed into a finished rail, within a period of twenty-four hours. Similar progress has been made in the application of mechanical principles to the production of the innumerable more highly finished iron and steel products, which vary in the finished state from the size of a small nail to that of a section of armor plate many tons in weight.

OTHER PRODUCTS.

In addition to these may be mentioned the processes developed in recent years for the preparation for market of phosphate rock, clay, and graphite, and other mineral products of minor importance.

With regard to the preparation of phosphate rock, the three grades of the Florida product are hard rock, land pebble, and river pebble, all of which is generally submitted to a preliminary washing, which may be a part of the method of mining, or entirely separate therefrom.

In the case of hard rock, the entire product of the mine is generally crushed and passed through log washers, consisting of a slightly inclined open box 30 feet long and 3 or 6 feet wide, containing one or two "logs" of wood or iron to which are attached chilled iron blades, set around the shaft diagonal to the length in a spiral. By the rotation of the shaft the blades churn the rock about and move it forward, delivering it at the end entirely freed from the matrix. A full supply of water is added through perforated 8-inch pipe over the center of the machine and the outflow carries away the sand, clay, and soft phosphate rock which is in suspension. The washed product is then screened and hand sorted on a traveling belt called a "picker" belt.

The present method of mining land pebble, which represents about one-fourth of the mass, is to utilize the power of streams of water to break down and disintegrate the material, collecting it in a sump and then pumping it to the mill constructed on a dredge, where the gravel is washed and screened.

In mining river pebble the pebble and intermixed sand is raised by centrifugal pump on a dredge, which discharges the washed and screened pebble to barges at one side while the worthless sand is rejected. The pebble is subsequently carried to a mill and rescreened after drying, to remove any remaining sand.

In phosphate rock of the pebble class the picking belts are usually dispensed with and the log washers are used only with the land pebble. The river pebble requires merely a gauze rinser for freeing it of sand and other foreign material.

Before it is shipped to market the washed product is dried in piles or in mechanical dryers, the former generally being used for hard rock while the latter finds special application in drying pebbles. The common form of mechanical dryer consists of a short iron cylinder with spirals of angle iron riveted to the inside, which serve to agitate the product and to pass it through the furnace. The flame in its passage through the cylinder is in direct contact with the rock to be dried.

Clay is frequently washed in Europe, although it is not the practice in the United States, except in the case of very high-grade clays. The washer generally consists of a circular pot or tank up to 25 feet diam-

eter, which contains a central rotating shaft with attached horizontal arms supporting a series of hinged rake teeth. In operation, water is run into the tank and at the same time the clay is added. The slaking action of the water breaks up the clay, and the rotation of the arms keeps the finer particles in suspension, while the pebbles and the sandy particles drop to the bottom and are there collected until removed. The continuous flow of the water through the tank carries off the clay particles, which are subsequently settled in pits.

EFFECT OF LABOR SUBSTITUTES ON COST OF MANUFACTURING METALS AND MINERAL PRODUCTS.

A brief review of the relative cost of sundry mining and metallurgical operations[1] shows the great progress made during the past few years. Actual prices are not quoted, as these so-called "business secrets" are religiously guarded from inspection; but the advance in succeeding years is stated in percentages of the first year of the series.

Table showing relative reduction of costs of manufacturing metals from mineral products.

Year.	Fluctuation in the total cost of producing pig iron at—		Comparative total cost of manufacture of steel ingots at an Eastern plant.	Cost of conversion of Bessemer ingots, exclusive of raw material, Pittsburg district.
	A Southern plant.	An Eastern plant.		
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
1887	.....	.....	.....	.....
1888	.....	.....	.....	100
1889	100	.....	.....	95
1890	104.3	100	.....	94
1891	97.1	97.2	100	94
1892	95.1	95.1	97.7	86
1893	89.6	83.1	89	86
1894	69.7	72.4	69.3	72
1895	69.8	70.7	68.3	66
1896	67	75.7	81.3	62
1897	63.2	69.9	75.8	54
1898	63.4	65.8	64.4	52

Year.	Cost of rolling wire rods.	Cost of coke production.	Money cost of lead ore smelted and refined.	Fuel consumption per ton of ore smelted.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
1887	.....	100	100	100
1888	100	.....	98	97.5
1889	95.4	.....	97	97.1
1890	90.9	.....	95	95.4
1891	90.9	.....	93	95.2
1892	87.3	.....	91	92.6
1893	86.4	.....	88	92.1
1894	77.3	.....	85	91
1895	74.5	.....	79	85.6
1896	72.7	.....	74	79
1897	62.2	87.3	65	71.2
1898	63.6	.....	.....	.....

[1] Abstracted from a paper by Charles Kirchhoff, entitled "A Decade of Progress in Reducing Costs." Trans. Am. Inst. Min. Engrs., Vol. XXIX, p. 352, Feb., 1899.

In lead smelting the reduction in cost has been due to the introduction of labor-saving appliances and to the fact that the use of larger smelting furnaces has required less attendance per ton of ore treated. The marked reduction in the fuel consumption is partly due to the introduction of larger furnaces and partly to improved and more intelligent methods of firing.

Summing up the conditions of progress and what may be expected in the future, Mr. Kirchhoff states:

> These examples, I believe, illustrate how rapidly in every branch costs have been reduced during the past decade, and they naturally lead to the question whether we may hope to continue such a rate of progress. The first impulse is to reply in the negative, since it is admittedly more difficult to effect reductions after they have once cut down costs to a certain point. Speculation is useless, but hopes are being held out that may be closer to a realization than many may be willing to admit. It is only necessary to point to the use of electric appliances in coal mining, to the introduction into the country on a large scale of European by-product ovens, to the recent rapid developments of the slag-cement industry, to the utilization of the blast-furnace gases for power production, to the continuous open-hearth process, and to the latest achievements in rolling-mill work.

IV. THE EXHAUSTION OF MINERAL DEPOSITS.

It is exceedingly difficult to get any exact data as to the exhaustion of the mineral deposits of the United States. Especially is this true of metalliferous ores, the nature of their deposition rendering it impossible to measure them accurately.

ANTHRACITE COAL.

The greatest known deposit of anthracite is that of eastern Pennsylvania, where it occurs in a region of about 1,700 square miles, which includes 484 square miles of territory underlain with workable beds. Many estimates have been made of the original amount of anthracite contained in the Pennsylvania fields, but most of them have been mere guesswork carried to an extreme. In 1877 Mr. R. P. Rothwell, in the Engineering and Mining Journal, called attention to the comparatively small amount of coal remaining in the anthracite fields and the short time it would last under the wasteful conditions of mining that then existed. For comparison with the estimates from other sources Mr. Rothwell's data are tabulated as follows:

Date, 1877:		
Area	square miles..	374
Total tonnage (tons of 2,240 pounds)		11,384,100,000
Marketed to end of 1877		381,674,335
Exhausted, including waste		1,036,366,685
Yet remaining (total)		10,347,733,315
Amount yet obtainable, allowing for waste		4,510,997,358

At the rate of supply (1900) of 50,000,000 tons annual production, this estimate gives the life of the field at 90 years from 1877.

In 1888 P. W. Sheafer, in the Proceedings of the American Association for the Advancement of Science, 1888, presented the following estimate of the amount of anthracite in the Pennsylvania coal fields:

Date, 1888:

Area.....square miles..	470
Total tonnage (tons of 2,240 pounds)	26,360,576,000
Amount to be mined, allowing one-third	8,786,858,666
Total shipments to January 1, 1888	628,612,720
Adding for local sales and increase used at mines	53,119,409
Total production to January 1, 1888	681,732,129
Available workable supply, assuming total work at two-thirds of coal deposit	8,107,125,537

At the rate of supply (1900), 50,000,000 tons annually, the life of the field by this estimate would be 162 years from January 1, 1888.

In discussing Mr. Sheafer's estimate in the Engineering and Mining Journal, 1894, Mr. Rothwell gives the total amount of coal in the ground at 9,000,000,000 tons, of which 3,000,000,000 was the amount available for supply. With the lavish methods of mining in vogue this would indicate an exhaustion of the field in 75 years. As a result of this discussion, Mr. Sheafer reconsidered his estimate of 1888 and reapportioned the available tonnage, making an estimated life of 75 years at 40,000,000 tons annual production. Mr. Sheafer allowed 30 per cent of the production from the southern or Wyoming field, 18 per cent from the middle, and 52 per cent from the northern, which would exhaust the Wyoming field in 51 years, the middle field in 67⅓ years, and the northern field in 75 years.

Mr. Joseph S. Harris, in the Forum for April, 1892, presented the following estimate of the production of anthracite. Evidently the basis of his conclusion was data collected by the Pennsylvania State Geological Survey.

Date, 1892:

Area.....square miles..	484
Total tonnage (tons of 2,240 pounds)	14,453,400,000
Marketed to end of 1891	844,019,239
Exhausted, including waste	2,532,000,000
Yet remaining	11,921,400,000
Estimating one-half of this available for future supply	5,960,700,000

In 1893 the Pennsylvania Coal Waste Commission prepared the following estimate:

Date, 1893:

Area.....square miles..	484
Total tonnage (tons of 2,240 pounds)	19,500,000,000
Marketed to end of 1892	885,000,000
Wasted to end of 1892	1,415,000,000
Remaining total	17,200,000,000
Obtainable, at 40 per cent	6,880,000,000

At the rate of annual production (1900) of 50,000,000 tons, this estimate gives the life of the field at 138 years from January 1, 1893.

If the assumption is made that the present rate of output of 50,000,000 tons annually will be increased to say 70,000,000 tons during the remaining life of the field, our supply will last probably from 70 to 100 years only, a serious outlook for the future of this important branch of the mineral industry.

With regard to the future rate of production, a reference to the diagrammatic chart on p. 217 will indicate that the maximum annual production of anthracite coal has apparently been reached, while that of bituminous coal is greatly on the increase. The rate of the growth in the future, the increase in supply, and the probable duration of supply are questions not absolutely determinable, as the factors of the future are unknown. It may be safely assumed, however, that the annual production of anthracite will hardly exceed 70,000,000 tons, and at this rate the field will probably last for 100 years, though the period may be somewhat prolonged by the diminution of the annual output, as part of the field may cease altogether to produce.

The demand for anthracite, however, since it is primarily the coal best suited for domestic consumption, has been remarkably steady, and with the increased population of the United States in the future will probably not fall greatly.

The cost of anthracite may be expected to increase in the future for the following reasons: (1) The larger capital involved in opening mines of greater depth; (2) the added expense of operating in mines of a greater extent; (3) the increased amount of waste material to be hoisted as the vein increases in depth; and (4) the greater amount of water to be pumped as the vein increases in depth.

At some anthracite collieries as much as 2 tons of waste rock and 10 tons of water are hoisted for every ton of anthracite coal sent to market.

It has been stated in another connection that the increased cost of anthracite is already leading to the substitution of bituminous coal where possible, and of coke for purposes requiring a cleaner fire than bituminous coal makes. This process will doubtless continue in the future. The increased cost of anthracite will probably also lead to improved methods for the utilization of such particles of anthracite as are now too small to burn without special appliances, or that must be cemented together into pieces of more available size. The ultimate result, however, must be to restrict the use of anthracite to domestic consumption within a limited though large area whose boundaries will be governed mainly by the rate of freight that may be charged by the transportation companies.

BITUMINOUS COAL.

Bituminous coal occurs in so extended a territory in the United States that it is impossible to form any estimate of the total amount available or of the future of this important mining industry. In some of the regions of Pennsylvania estimates have been made of the coal reserves, and one of them, the Pittsburg vein, which is 50 miles square, is given a life of 50 years at its present rate of production. Other bituminous deposits in Pennsylvania at their present output are given a longer life, approximating 100 years.

NATURAL GAS.

The supply of natural gas existing in the United States is definitely limited. It is a stored product, and every foot that is withdrawn from the reservoirs containing it reduces the reserve stock. Many gas wells already in use demonstrate the fact of an appreciable decline in the volume of production, and those in control of the present natural-gas supply in the United States are gradually realizing the importance of utilizing the product to the best advantage by avoiding the former wasteful methods of burning the gas, as in the case of torches for illumination, which were left burning the entire day, or as burned without constraint in furnaces and in private grounds, etc. The former waste was one of simple vandalism.

The question of the probable duration of natural-gas production is one of great importance, but data have not yet been accumulated in any part of the field by which even an approximation to a definite estimate can be given. At Findlay, Ohio, there is a vast but not incalculable amount of gas, either dry or held in the oil accompanying it. Upon this stock the wells are drawing, and while from it a given number of millions of cubic feet can be used for a given number of years, when once exhausted there is no more probability of its renewal in the reservoir than there is in the growth of coal in mines that have been worked out. The supply of gas, as well as that of oil, seems to be definitely limited by the water pressure in oil and gas bearing porous rocks. When gas and oil occur in the same field the first suggestion of failure of the gas field will be the invasion of the gas rock by oil and of the oil rock by salt water.

The future exhaustion of the natural-gas supply of the United States is fully evidenced by the decrease in production during recent years, as demonstrated by the subjoined table.[1] It would be extremely difficult, if not impossible, to collect complete statistics of actual volume

[1] Mineral Resources of the United States, 1900, U. S. Geological Survey.

of production, and the reports are given, for a large part, in the value of the coal displaced. This was especially the case in the early years of the production, as modern methods of direct measurement had not then been used.

Approximate value of natural gas produced in the United States from 1888 to 1900.

Year.	Value.	Year.	Value.
1888	$22,629,875	1895	$13,006,650
1889	21,107,099	1896	13,002,512
1890	18,792,725	1897	13,826,422
1891	15,500,084	1898	15,296,813
1892	14,800,714	1899	20,074,873
1893	14,346,250	1900	23,606,463
1894	13,954,400		

The value of the coal displaced uniformly decreased year by year from $22,629,875 in 1888 to the minimum, $13,002,512, in 1896, since when it has increased to $20,074,873 in 1899 and $23,606,463 in 1900. In considering the production for the past few years due allowance must be given to the facts that the value of coal has increased very appreciably in this time and that larger quantities of natural gas, used for domestic consumption, are now reported in terms of the actual sale of the gas. Both of these conditions tend to raise the money equivalent values given for recent years in excess of the ratio of the actual quantities produced. Perhaps the best criterion of the waning production is to consider the reports from the numerous companies operating in the field, which, without exception, state that besides the fact that many wells have been exhausted, the pressure of the gas in the operating wells has gradually decreased and is still decreasing.

PETROLEUM.

It is agreed among geologists that the quantity of petroleum in the United States deposits is fixed. Consequently every barrel that is removed depletes the stock in reserve, and it is only a question of time before the supply will become exhausted or the cost of production so great as to make its production impracticable from a commercial standpoint.

The total amount of petroleum in the United States is enormously large and any calculation passes at once beyond the range of clear comprehension. If petroleum is generally distributed throughout a series of rocks in any appreciable percentage, it is plain that the aggregate amount must be enormous. Even at one one-thousandth of 1 per cent in a series of rocks of 1,500 feet deep the quantity in the ground would be 75,000 barrels to the square mile. While, however, the amount of petroleum underlying the rocks is so great, in its dif-

fused and distributed state it is entirely without value. In order to be of commercial importance it must be accumulated in rocks that serve as reservoirs; indeed, in respect to this need of concentration petroleum agrees with most other forms of mineral wealth.

Geologists are rather indefinite as to the supply of petroleum in the United States. Some believe that the available supply is practically inexhaustible, and while the finding of great reservoirs, producing spouting wells, has been and always will be uncertain, and while the duration of the production of any given field is limited, yet sufficient new wells are secured in new and old fields so that a moderate return is assured. The recent discoveries in California, Texas, and elsewhere show the possibility of continued production. At the same time, it must be remembered that the oil in some of these fields is much less suited for illuminating purposes, unless new methods of refining it shall be devised, than the oil from the Ohio and, still more, that from the Pennsylvania field. The limit of production in these fields is more definite.

Henry E. Wrigley, in 1882,[1] discussed the amount of oil remaining in Pennsylvania and New York, and gave an estimate of 154,000,000 barrels as the production of oil up to January 1, 1882, and of 96,000,000 barrels of oil remaining in this oil region. According to his views, while old oil fields may be resuscitated and the enormous waste and destruction avoided in future, the day was not far distant when the check on the Bank of Nature against the fixed amount of oil that is placed to our credit would come back with the indorsement, "No funds." In view of his long experience in the field, Mr. Wrigley was of the opinion that the time of the exhaustion of the Pennsylvania fields was rapidly approaching. In a later paper (1885), by Mr. C. A. Ashburner,[2] it was shown that up to January 1, 1885, 261,000,000 barrels of oil had been produced, which proves Mr. Wrigley's estimate to have been incorrect.

He predicted, however, that the product per well would be considerably reduced in the future and that the cost of production per barrel would be increased. This prediction seems to have been fulfilled as regards the Pennsylvania field, concerning which especially it was written. The output of oil in Pennsylvania has never but once since 1882 equaled the record of that year. The maximum production was in 1891, 33,009,236 barrels, or nearly 3,000,000 barrels more than in 1882. Since 1891 there has been a steady falling off in production, with only a slight recovery in 1895 to 1897, and in 1899 this State produced only 14,374,512 barrels of oil. During the past decade, however, oil has

[1] Transactions of the American Institute of Mining Engineers, Vol. X, p. 354.

[2] Transactions of the American Institute of Mining Engineers, September, 1885, Vol. XIV, p. 429.

been discovered in West Virginia in large quantities. The West Virginia oil belongs to the same general field as that of Pennsylvania. The output of this State in 1899 almost equaled that of Pennsylvania. Nevertheless, the total output of the Appalachian field, which includes these two States, with parts of Ohio and New York, seems likely to remain stationary or decrease in the future, the production in 1899 being less than that in 1896 and 1897.

The great discoveries of oil in northwestern Ohio and Indiana came later than the prediction of Mr. Ashburner and greatly swelled the aggregate production of petroleum from 1887 onward. Even in this field, however, it may perhaps be questioned whether the maximum production has not been reached, so that decrease in the future may be anticiptated. The product of the "Lima-Indiana" field in 1896 was 25,255,870 barrels, while in 1899 it was only 20,225,356 barrels. Meantime, there has been an advance in the price of petroleum, doubtless due largely to an increased cost of production. It is probable that eventually in both of these fields the cost of production will become so great as to cause a cessation of output, even while there yet remains a large quantity of petroleum in the oil sands.

QUICKSILVER.

The subjoined table of production of quicksilver in California has been compiled by the United States Geological Survey.[1] It gives the annual production from 1870 to 1900.

Amount and value of quicksilver produced in the United States from 1880 to 1900.

Year.	Flasks of 76½ pounds.	Value.	Year.	Flasks of 76½ pounds.	Value.
1870	30,077		1886	29,981	$1,060,000
1871	31,686		1887	33,825	1,429,000
1872	31,621		1888	33,250	1,413,125
1873	27,642		1889	26,484	1,190,500
1874	27,756		1890	22,926	1,203,615
1875	50,250		1891	22,904	1,036,386
1876	72,716		1892	27,993	1,245,689
1877	79,395		1893	30,164	1,108,527
1878	63,880		1894	30,416	934,000
1879	73,684		1895	36,104	1,337,131
1880	59,926	$1,797,780	1896	30,765	1,075,449
1881	60,851	1,764,679	1897	26,648	993,445
1882	52,732	1,487,042	1898	31,092	1,188,627
1883	46,725	1,253,632	1899	30,454	1,452,745
1884	31,918	936,827	1900	28,817	1,302,586
1885	32,073	797,189			

From this table is evident the gradual exhaustion of the quicksilver deposits. The production was at its greatest from 1875 to 1882, when the output averaged 64,000 flasks (of 76½ pounds net), since when it

[1] Mineral Resources, Twenty-second Annual Report, 1901.

has fallen to but little more than 30,000. The total production in 1900 amounted to 27,855 flasks. The New Almaden (California) deposits are rapidly being exhausted, and without exception the annual output of this and other mines has diminished more or less rapidly. Like many other mineral deposits, it is only a question of time when the constant removal will deplete the reserves until it will no longer be profitable to mine them.

With the exhaustion of the California deposits those in other sections of the country will naturally be developed, notably in Texas and in Oregon. The former State yielded 1,700 flasks and the latter 233 flasks in 1900, with promise of an increased production in 1901.

Many problems connected with the mining industry arise from the formation of combinations. The subjects of industrial combinations and of railroad combinations are treated elsewhere, while the problems relating to mine labor are discussed in connection with the general subject of labor.

TRANSPORTATION.

I. PRESENT CONDITIONS AND EXPERIENCE SINCE 1870.

STATISTICS OF MILEAGE, EMPLOYEES, EQUIPMENT, ETC.

MILEAGE.

The magnitude of the railroad interests of the United States may best be shown, perhaps, by a statement respecting their mileage. Official statistics of June 30, 1900, showed an aggregate of 193,345 miles of single track. This has been increased up to the present time so that there were probably more than 200,000 miles of line in the country by the close of 1901. The significance of this may best be appreciated by the statement that it is equal to an eight-track railroad encircling the globe. According to the latest European data, it amounts to about 40 per cent of the railway mileage of the world, exceeding considerably the total mileage of all the countries of Europe combined. The situation may be illustrated in another way, by reference to the relation of mileage to population and area. Europe has about 2,208 inhabitants to every mile of road, while in the United States there are only 392. This indicates that proportionately to population the United States is more than five times as well equipped as Europe. The same thing may be said with reference to mileage and superficial area. For the United States we have 15.9 square miles of territory for every mile of railroad. The proportions for other countries are: For Europe, 22.17 square miles per mile of road; for British North America, 208.83 square miles per mile of road, and for France 7.8 square miles per mile of road. The official statistics of the Interstate Commerce Commission represent these facts in another way, namely, that for June, 1900, there are about 25 miles of line for every 10,000 inhabitants. This proportion is somewhat less than in 1890, when it exceeded 26.

This huge aggregate mileage represents practically a growth of 50 years; since in the year 1851, according to Poor's Manual of Railroads, there were less than 9,000 miles of line in the whole country. The period of prosperity subsequent to the discovery of gold in California

led to the construction of some 17,000 miles of road prior to the panic of 1857. At this time the only through routes were the lines from New York to Boston, opened in 1849, and from New York to Albany, two years later, with the Pennsylvania Railroad to Pittsburg, opened in 1854. During this period the railroad system reached out to the Mississippi by the building of the Rock Island road, speedily followed by the other "Grangers." The Hannibal and St. Joseph road was the first to reach the Missouri, in 1859. In the Southern States the development was considerably earlier, the Georgia Railroad to Atlanta and the Central of Georgia Railway having been constructed prior to 1840. By 1860 many of the principal lines, such as the Louisville and Nashville, the Mobile and Ohio, and the Chattanooga, Memphis, Nashville and New Orleans, had been opened. Thus the civil war began with an aggregate mileage of about 30,000 for the country at large.

The period immediately subsequent to the civil war was characterized by the exceedingly rapid growth of railroads, especially in the extensions toward the Pacific coast. Thirty-six thousand miles of line were built before 1873, more mileage in fact than had been built in the preceding 34 years. Nearly one-half of all this increment, it should be noted, was constructed west of the Mississippi and Missouri rivers. The greatest event at this time was the opening of the first through route to California by the completion of the Union Pacific in 1869. The experience since the civil war is of a continued succession of waves of prosperity, interspersed with times of considerable depression. Thus, the years from 1873 to 1879, following the panic of 1873, are in strong contrast with the boom which prevailed prior to that time. Less than 16,000 miles of road were built during this period, bringing the total for 1879 to about 86,000 miles. This period of depression was succeeded, after the resumption of specie payments, by the unprecedented activity in railroad building of the early eighties. This is the time during which the Atchison, Topeka and Santa Fe, and the Southern and Northern Pacific roads were opened. In the year 1882, upward of 11,000 miles of new line were laid, a record exceeded only by 1887, when 13,000 miles were built. The panic of 1884, distinctly due to overspeculation in railroad construction, put an end to this activity, and for two years there was a considerable cessation in railroad building. A period of activity from 1886 to 1888 followed the depression incident to the panic of 1884. In those three years 28,000 miles of railroad were built, giving a total in 1890 of about 167,000 miles. In fact, from 1880 to 1890 more miles of new road were built than during the whole period previous to 1875.

The last decade has been characterized by a steady decline in the amount of construction of new lines. It would seem as if the main trunk lines and the principal systems had been built, leaving only, for

a large part of the country, the filling in of branch lines and of subsidiary routes. Low-water mark in railroad construction was touched in 1897, when only 1,600 miles were built in the entire United States. During the entire period of depression from 1893 to 1897, less than 2,000 miles were built yearly. At the present time, however, there are indications of a marked revival of activity. The calendar year 1900 shows new construction aggregating almost 5,000 miles, bringing the total, as already said, to about 200,000 miles of line in all at the close of the present year.

PERSONS EMPLOYED.

The importance of railroad interests may be shown with reference also to the number of persons employed. For the first time in our history, the number is in excess of 1,000,000. It is given officially as of June 30, 1900, as 1,017,653 persons, the larger part of these being men; and on the computation of four persons to a family, therefore, between 4,000,000 and 5,000,000 persons are directly interested in the welfare of the railroad industry. Including with these all the persons indirectly helping to produce railroad supplies, and who are otherwise dependent for their livelihood upon this industry, probably, according to the estimate of the late Aldace F. Walker, approximately one-fifth of the population of the United States is concerned, not as shippers but as employees. The persons directly employed received an aggregate wage of $577,000,000 in the year ending June 30, 1900. These figures represent a very greatly increased employment over the years of depression from 1893 to 1897. For instance, it is perfectly clear that after the year 1893 there was a very great reduction in the number of persons employed, amounting in 1894, for example, to 96,000. The year 1900 is characterized by an increase over 1897 of about 194,000 persons. This consequently means a great increase in the outlay for wages and supplies.

CAPITAL INVESTED.

The various estimates placed upon the amount of money invested in railroads agree in general that it is equal to about one-fifth of the capital of the country. The official statistics of the Interstate Commerce Commission for the year ending June 30, 1900, place the aggregate value of securities at par at $11,491,000,000. Poor's Manual for 1900 represents the total cost to have been something in excess of $10,000,000,000, but the value for all railroad assets is estimated at about $12,500,000,000. Accepting these estimates provisionally, and also the estimate of the total wealth of the United States in 1900 at about $90,000,000,000, it appears that investments in railroad property form from one-seventh to one-fifth of the aggregate capital. This is based upon the assumption that railroad securities at par represent the value of the property.

Judged by market values at the present time, this amount would be considerably increased, approximating perhaps the estimate made by Edward Atkinson before the Cullom committee in 1886, that the railroads formed about one-fifth of the total wealth of the country. If we accept the estimate recently made in a foreign financial journal of the cost of railroad property the world over at $33,000,000,000, it would seem that the American railroads constitute more than one-third of the railroad property of the world.

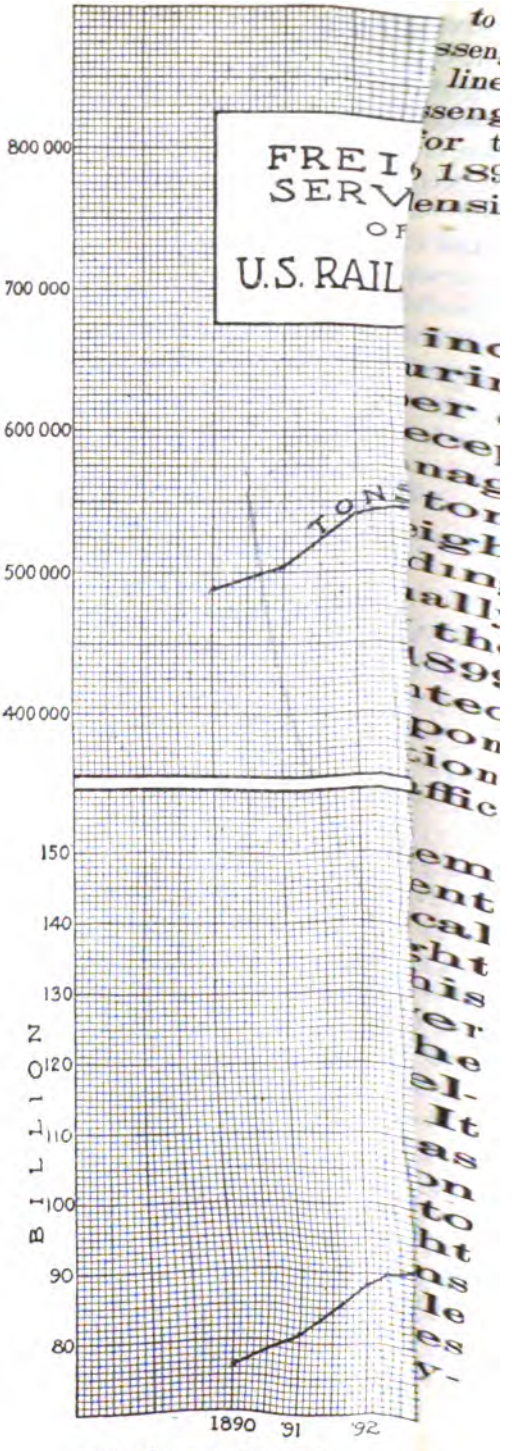
RAILROAD EQUIPMENT.

This property, in addition to the right of way and real estate, which, of course, is difficult to estimate, consists for the United States, for the fiscal year 1900, of 37,663 locomotives and 1,450,000 cars of all classes, exclusive, however, of cars owned by private companies and firms. These cars alone, it may be observed, would make a solid train of about 8,000 miles in length. It is interesting to observe that a very considerable addition to this equipment has been made during the year 1900. The period of depression from 1893 to 1897 witnessed very little increase in this direction—less than 13 per cent increase, in fact, from 1894 to 1899 in the number of cars. The year 1900, and, from all appearances, the year 1901 also, have been characterized by extraordinary activity in construction, nearly 75,000 new cars having been built during the fiscal year to June 30, 1900, this being equal to nearly one-half of the entire increase which has taken place from 1894 to 1899. This increase has made possible considerable economy of operation, as may be shown later.

GROWTH AND DIVERSIFICATION OF TRAFFIC.

PASSENGER TRAFFIC.

The social or public service of railroads in the United States is best shown by the statement that during the fiscal year 1900, 576,865,000 passengers were carried, a number almost seven and a half times the total population of the United States. A single railroad, the Pennsylvania system, according to its annual report for 1900, carried 6,000,000 more passengers than the population of the United States. This movement may be shown in another way by the passenger mileage, as it is called—that is to say, the number of passengers carried one mile. This amounted to upward of 1.6 billions in the year ending June 30, 1900. It means an equivalent of a journey of 211 miles per capita for the population of the country. An ever increasing use of the railroads is thus demonstrated, as the data for preceding decades show. Thus, for example, the passenger mileage, showing the average length of



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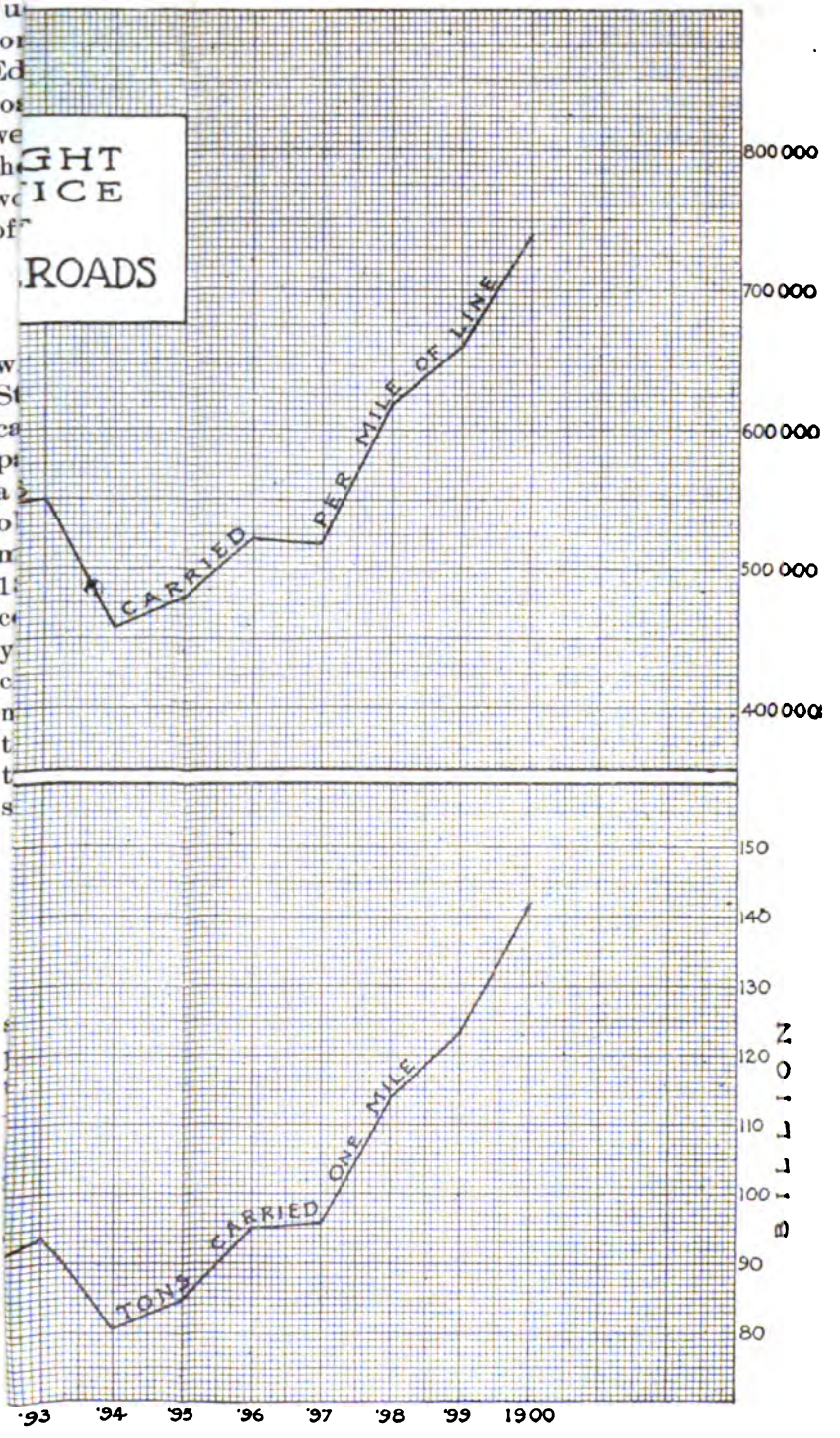
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trip for each person in the United States in 1870, was 138 miles. This rose to 141 in 1880, to 189 in 1890, and, as has been stated, to 211 miles in 1900. It also denotes an increasing density of passenger traffic, as the number of passengers carried one mile per mile of line in 1900 was 83,295, while in 1899 it was only 77,821. The passenger density for the year 1899 was not greatly in excess of that for the early part of the decade, being, in fact, less than from 1891 to 1894; but the recent era of prosperity has brought about in 1900 a density of passenger traffic hitherto unequaled since 1893.

FREIGHT TRAFFIC.

The freight service of the railroads of the United States, as indicated by the number of tons of freight reported as carried, was, during the fiscal year 1900, 1,100,000,000 tons, more than twice the number of tons reported as carried in 1887. These figures, however, are deceptive, inasmuch as they take no account of the duplication of tonnage in railroad reports. Each railroad reports the total number of tons carried without respect to the previous carriage of the same freight by another road. An allowance for this duplication would, according to the best accepted criterion, reduce the number of tons actually transported by about one-half. For example, estimates made by the statistician of the Interstate Commerce Commission for the year 1899 showed that, while the total tonnage reported for that year amounted to 959,000,000 tons, only 510,000,000 tons actually originated upon each of the several roads which reported. Applying this proportion to the data for the fiscal year 1900, we would have a total freight traffic originating on the various American roads of 593,970,000 tons.

A better way of showing the freight service of the railroad system is by means of what is called ton-mileage; that is to say, the equivalent of the number of tons of freight carried one mile. This for the fiscal year 1900 amounted to 141,599,000,000 tons; that is to say, the freight service of the United States was equivalent to the carriage of this amount of freight one mile. The diagram appended shows by its lower curve the growth of this ton-mileage for the United States for the decade since 1890. Consideration of this curve will manifest the development in freight traffic which has taken place during this time. It shows that the steady and enormous increase up to the year 1893 was suddenly interrupted by the panic of that year and by the depression of the following three years. Only in 1897 did the railroads begin to recover from the effects of that depression, since which time the freight movement has increased, by leaps and bounds, from 95,000,000,000 tons carried one mile in 1897 to almost 142,000,000,000 tons carried one mile in 1900. Consideration of monthly earnings in a later paragraph makes it probable that the year 1901 will greatly exceed the year 1900, carry-

The following table shows the classification of tonnage for the United States as a whole and its great divisions as described for the fiscal year 1900:

Summary showing freight traffic movement by class of commodity originating on line of reporting roads—United States and by divisions.

[From Statistics of Railways, 1900, p. 66.]

Class of commodity.	United States.		Division I. Groups I, II, and III. Territory north of Ohio and Potomac rivers and east of Illinois and Lake Michigan.		Division II. Groups IV and V. Territory south of Ohio and Potomac rivers and east of Lower Mississippi River.		Division III. Groups VI, VII, VIII, IX, and X. Territory west of Lake Michigan, Indiana, and Lower Mississippi River.	
	Tonnage reported as originating on line.	Per cent of aggregate.	Tonnage reported as originating on line.	Per cent of aggregate.	Tonnage reported as originating on line.	Per cent of aggregate.	Tonnage reported as originating on line.	Per cent of aggregate.
Products of agriculture	53,468,496	10.35	18,067,740	6.12	5,116,961	8.02	30,283,795	19.22
Products of animals	14,844,837	2.87	6,197,118	2.10	778,692	1.22	7,869,027	4.99
Products of mines	271,602,072	52.59	171,322,650	58.07	33,056,168	51.82	67,223,254	42.65
Products of forests	59,956,421	11.61	22,642,424	7.68	12,233,843	19.18	25,080,154	15.91
Manufactures	69,257,145	13.41	48,746,706	16.52	7,530,373	11.81	12,980,066	8.24
Merchandise	21,974,201	4.26	12,146,648	4.12	2,304,401	3.61	7,523,152	4.77
Miscellaneous	25,329,045	4.91	15,913,896	5.39	2,768,715	4.34	6,646,434	4.22
Grand total	516,432,217	100	295,037,182	100	63,789,153	100	157,605,882	100

From this it appears that the products of agriculture formed but little over 10 per cent of the aggregate freight originating upon the lines of the country. It will surprise many to notice that the single class of manufactures, exclusive of merchandise, considerably exceeds this proportion—being 13.41 per cent. The grain tonnage seems to be of greatest importance in the Northwest, but even here it forms less than one-fifth of the total, and in the South it forms only 8 per cent. Important as the movement of cotton is to the roads and the section of country concerned, it is not without interest to notice that the product of a single corporation, the Carnegie Company, at Pittsburg, exceeds the entire cotton crop of the United States in tonnage delivered to the railroads. The most important traffic to the railroads, measured by mere tonnage, which, of course, takes no account of revenue, would seem to be the low-grade freight classed as products of mines. This forms upward of one-half the total of original freight for the United States. The most important commodity in this class is, of course, coal, both hard and soft, although it includes also ores, sand, stone, and similar articles. Lumber and products of the forests are relatively unimportant, constituting even in the northwestern division but 16 per cent of the traffic. It will be interesting to compare this table with similar ones computed for a series of years, but at present no official data exist for that purpose.

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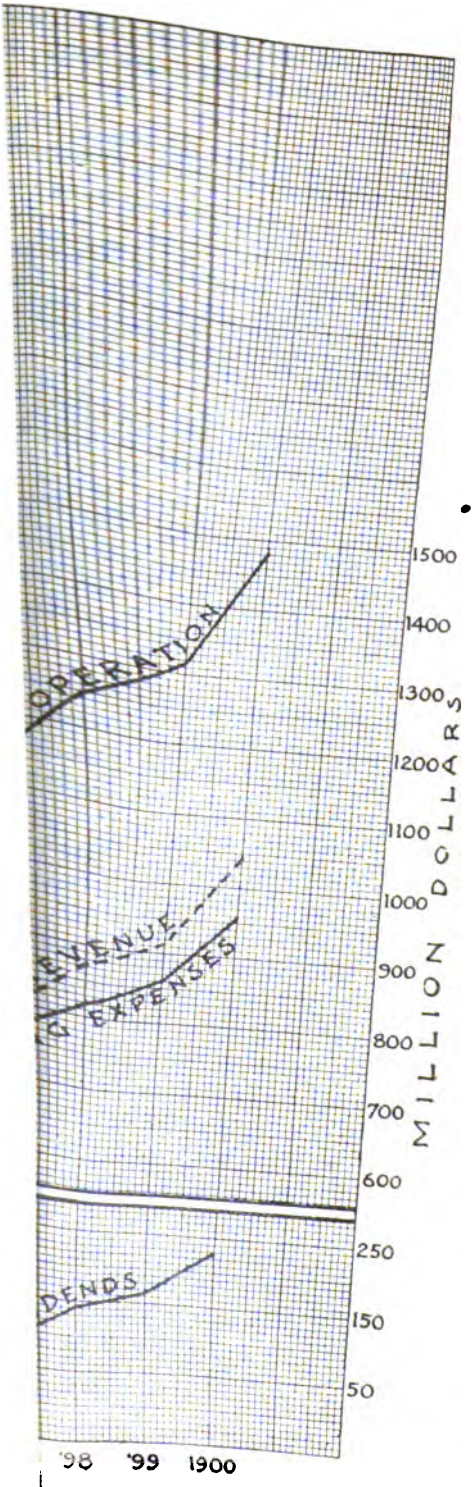
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EARNINGS, DIVIDENDS, AND SURPLUS.

EARNINGS.

The years 1898–99 and 1900 form a very striking contrast to those of the period of depression from 1893–1897 in respect of earnings and dividends. The best index of the general movement of railroad business is found in the gross earnings. Net earnings involve so many deductions of various kinds, especially in the way of expenditure for improvements, etc., that they are less reliable for purposes of comparison. For the fiscal year 1900 the gross earnings of the railroads of the United States were $1,487,000,000 in round numbers, or upward of $4,000,000 a day. This represents an increase of more than $173,000,000 over the gross revenues of the fiscal year 1899, which in itself greatly exceeded the preceding year. The course of railroad earnings since 1890 is graphically shown by the appended diagram. This shows a steady increase up to 1893, at which time the earnings were $1,220,000,000. Then came a sudden drop to $1,073,000,000 in the succeeding year, with some variations to 1897, after which earnings increased by leaps and bounds to the figure above mentioned. In the spring of 1900 it appeared as if high-water mark in railroad earnings had been reached. But in the fall and winter especially came a great revival of business activity. Despite the failure of the spring wheat crop and the coal strike, this factor was sufficient to swell the earnings to the highest point then known in the history of the railroad system. On the whole the calendar year 1900 was the most favorable to railroad interests ever known, as measured by earnings. It is estimated that such earnings in 1900 exceeded by more than one-third those of three years before. Stated in another way, covering the calendar rather than the fiscal years, it appears that in two years, from 1898 to 1900, gross earnings increased by approximately $265,000,000.

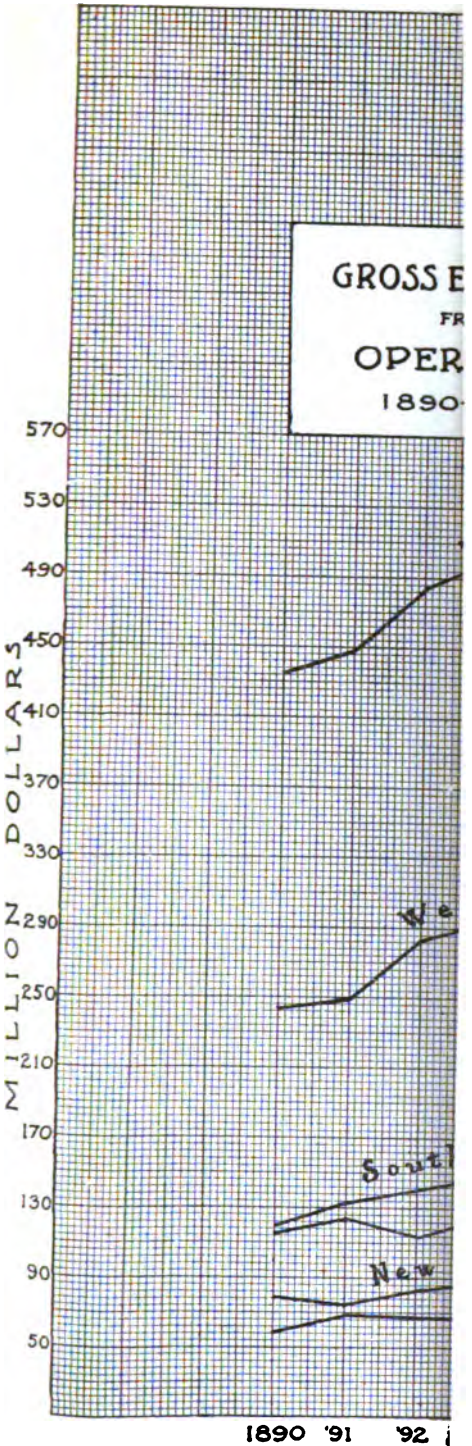
The prospects for the year 1901 until the protracted drought of July were indicative of an increase over the banner year 1900 no less remarkable than its excess over the preceding year. Gross receipts for the first three months showed a gain of 10 to 12 per cent over the corresponding period in 1900; results fully substantiated by the latest returns for the six months to July 1. The Commercial and Financial Chronicle reports for these six months an increase of $64,000,000 in gross earnings of 179 roads as compared with 1900. This represents an increment of more than 10 per cent in gross and of 14 per cent in net earnings over the corresponding period of the preceding year. For these same roads, the gross earnings of the first half of 1901 stand more than $270,000,000 ahead of the last year of depression, 1897. This prosperity was peculiarly marked in both 1900 and 1901 in the southwestern section of the country, where increases in both net and

gross earnings were phenomenal. The prosperity of the vario roads was also very marked, it being computed, for instance, th the first three months in 1901 net earnings of the coal roads incr 44.5 per cent over the corresponding period in 1899, this in following the increase of 11.8 per cent over 1898. It seems unlikely that the unfavorable crop conditions in 1901 may retard increasing prosperity, especially in the sections of the country affec Nevertheless, the experience of the year 1900 showed that, des the failure of the spring wheat crop, prosperity elsewhere continu unabated, and it seems not impossible that the localization of t damage may not seriously affect the railroads of the country as a whol

The movement of gross earnings for different sections is show by the next diagram. This, it will be observed, classifies the road according to their geographical distribution. From this it would appear that fluctuations as between periods of prosperity and depression are far more violent upon the trunk lines and the western roads than upon either the southern and southwestern or the New England and Pacific systems. In other words, for New England and the Pacific roads there has been a fairly constant movement during the last decade in the gross earnings, the years 1895–96, particularly, not being appreciably less favorable than 1893. On the other hand, they have been almost equally prosperous with the year 1899, which in other parts of the country produced such a notable increase of revenue for the trunk lines and the western roads. It appears not improbable, however, that the results, when added, will show that even for these stable roads there has been a great increase in 1901 over any of the preceding years.

Net earnings of all roads for 1900 amount to $525,616,000, an increase of about $69,000,000 over 1899. As compared with 1894 this represents phenomenal prosperity; in that year the gross earnings, after deducting operating expenses, being only $341,000,000, a decline of over $50,000,000 from the preceding year. Net earnings during the period of prosperity have not increased in as rapid proportion, however, as gross, as clearly appears from the diagrams both of yearly and monthly earnings appended. This is due to the fact already mentioned that great expenditures have been made for construction and maintenance, such expenditures being charged to operating expenses rather than to capital account.

After deducting expenses of operation, it is customary to deduct the fixed charges, such as interest on bonds and indebtedness, in order to determine the amount available for dividends and surplus. This figure, known as the net income for the year, amounted in 1900 to $227,260,000. This net income available for dividends or surplus has varied according to the lowest curve on the diagram opposite page 267, from $115,000,000 in 1892 to barely $55,000,000 during the depression



(To face page 268—1.)

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of 1894 and 1895, rising again, however, in 1899 to $164,000,000. This is a remarkable result. Briefly stated, net earnings available for dividends and surplus for 1900 are 2¼ times those of 1890 and more than four times the corresponding figure for 1894. This result is due not only to the great increase in the volume of business, but undoubtedly also to the reduced amount of fixed charges, such as interest on bonds, etc. In other words, by refunding at lower rates of interest, by reduction of bonded indebtedness, through reorganization, etc., the amount which must be deducted from net earnings before dividends can be paid, has been steadily decreased. Comparison of 1890 with 1900 shows that fixed charges have increased by only 20 per cent, while the dividends paid have increased 55 per cent, and net income has increased 125 per cent.

DIVIDENDS.

Dividend payments, that is to say, the return upon capital stock as distinguished from interest upon bonded indebtedness, are likewise indicative of the prosperity of the railroad industry. Dividends for the fiscal year 1900 amount to $139,602,000. For the three years of business depression from 1895 to 1897 the amount of such payments was below $90,000,000, falling to $85,000,000 in 1895. This constitutes an increase, then, of over 50 per cent in amount of dividends paid within four years, taking no account of the surplus remaining or of extraordinary expenditures for improvements. This notable increase in dividend payments is more marked than the increase made in amounts paid as interest upon bonded indebtedness. Such prior liens, of course, were taken care of necessarily in 1898 when prosperity first became pronounced. Thus it is estimated that the amount disbursed for interest and dividends in July, 1900, exceeded by 75 per cent similar disbursements in July, 1894. At the same time, considering dividends alone, there was apparently a disbursement in the latter year of twice the amount paid six years earlier.

Not only the amount of interest paid, but also its distribution is indicative of prosperity. It is of far greater importance from the public point of view that the return upon a large proportion of railroad capital should be fair in amount rather than that a few high-priced securities should absorb more than their due proportion, leaving many stocks without any dividend return at all. From the available statistics it appears that during three years of depression, from 1895 to 1897, less than 30 per cent of the amount of railroad share capital outstanding received dividends. The highest proportion since 1887, when statistics became available for comparison, was 40 per cent in 1891, until 1899 when a similar figure was attained. The fiscal year 1900 is characterized, however, by a dividend return upon 45.66 per

cent of all the railroad stocks outstanding. This, it will be observed is an increase of more than 50 per cent in the proportion receiving such return over the period of depression.[1] Poor's Manual for the calendar year 1900 gives a still higher proportionate increase, stating that for 1900, 48 per cent, or nearly one-half of the railroad capital was receiving a dividend in 1900, the proportion for 1897 having been only 28 per cent.

SURPLUS.

Statistics showing surplus available after payment of dividends, still further serve to illustrate the prevalent prosperity and to accentuate the contrast with the preceding period of depression. Whereas the year 1897, despite the small amount of dividends paid, closed with a deficit of $6,000,000, 1898 appears with a surplus of $44,000,000, this figure rising to $53,000,000 in 1899 and to $87,657,000 for the fiscal year 1900. This increase has been accomplished, despite an increased expenditure for maintenance and improvement which is unprecedented in amount. Operating expenses for the year in question exceed by $423 per mile of line those for 1899. A large part of this excess is undoubtedly due to expenditures made for permanently improving the facilities for transportation in the future.

Such an increase in railroad earnings could not but reduce greatly the mileage and capital of roads financially embarrassed. Thus it appears that whereas in 1893 more than one-third of the railroad capital of the country was insolvent—administered, that is to say, by receivers appointed by the United States courts—this proportion had fallen in 1900 to $78,234,000, an insignificant proportion of the total stock and bonds outstanding. The mileage operated by receivers and roads financially embarrassed has fallen progressively from 29,340 miles in 1893 to 1,165 miles in 1900.

PRICES OF SECURITIES.

Corresponding to the increases in net earnings, dividends, and surplus above mentioned, there has been an unprecedented rise in market quotations for railroad securities, involving at the same time violent speculative fluctuations. This movement is graphically shown by the lowest curve on the opposite chart, giving the average prices of 20 selected active stocks, both industrial and railroad, down to 1896, after which time the average prices of 20 railroad stocks are separately charted.[2] From an average price of about 78 in May, 1890, we have

[1] See diagram opposite page 402.

[2] Compiled daily from the Wall Street Journal. The twelve industrial stocks used are: Cotton Oil common, Continental Tobacco, Federal Steel common, General Electric, Leather preferred, National Lead common, Pacific Mail, People's Gas, Rubber common, Steel and Wire common, Sugar common, and Tennessee Coal and Iron.

The twenty active railroad stocks used are: Kansas and Texas preferred, Chesapeake

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fluctuations until April of 1893, when the panic severely depressed prices to an average of 43. From that time until August of 1896 prices remained low, touching the lowest point in the decade at 41 and a fraction in the latter year. A rapid rise ensued until April of 1899, with an average of 87. This was followed by a slight decline until September of 1900, at which time prices averaged 73. From this level, by leaps and bounds, at a rate of increase perhaps never before equaled for so extended a period, the average price rose until May of 1901, when it reached 117. Comparison of the two curves shows averages for railroads and industrial stocks respectively, emphasizing the fact that this great advance has been peculiarly in railroad securities. Since September of 1900 a remarkable recovery in industrial stock values has ensued, but the previous high point in 1899 has not been surpassed; whereas in the case of railroads, 1901 has established a record vastly superior to that of 1899.

As indicative of the extent of such changes in particular securities the following instances may be given: Missouri Pacific stock, quoted at 10 in 1897, rose to 57 in November, 1900, and then to 115 in April of 1901; Atchison, Topeka and Santa Fé rose in the space of a year from 26 to 90, quotations for the same in 1896 being 8; Baltimore and Ohio from 76 in November, 1900, to 114 in the following April; New York Central from 133 to 171; Northern Pacific from 58 to 119; St. Paul from 117 to 185; Southern Railway from 13 to 34, and Union Pacific from 58 to 133 within the same period. Thus we see advances varying all the way from about one-third in the case of the trunk lines to as high as 400 per cent, and in the first extreme case mentioned to an increase of ten times in value. The only period with which comparison for such speculative fluctuations may be made is with the boom in railroad stocks in the years 1877 to 1881. During this period the rise in many securities was almost as great as during the last few months, and many securities attained quotations at that time not equaled since until this year. The contrast between railroad prosperity from 1877 to 1883 and the present time consists largely in this—that in the preceding period a large volume of business was due to the transportation of materials for the construction of new railroads, this being the period, as has already been described, when a great expansion of the railroad system took place. On the other hand, the prosperity in 1898 to 1901, while undoubtedly greatly stimulated by the enormous expenditures for increased equipment and improvements, has not involved new railroads to be supported from the existing business.

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and Ohio, Denver preferred, Brooklyn Rapid Transit, Union Pacific preferred, New York Central, Atchison preferred, C., C., C. & St. Louis, Southern Railway preferred, Missouri Pacific, Jersey Central, Manhattan, Northwestern, Louisville and Nashville, Wabash preferred, Rock Island, Burlington, St. Paul, Northern Pacific preferred, Norfolk and Western preferred.

This enormous volume of traffic, much of it created by the railroads for themselves, can have no other result at the present time than to enable them to transport freight and passengers in future at far lower cost than ever before.

THE MOVEMENT OF PASSENGER FARES.

A comparison of freight rates and passenger fares in the United States with those of Europe shows that, whereas in the United States passenger fares per mile are higher than freight rates for the transportation of one ton a mile, in Europe the opposite relation obtains.[1] To be more explicit, in the United States the average fare per passenger mile for 1899 was 1.925 cents, while the average rate of freight per ton mile was 0.724 cent. This shows that passenger fares exceeded freight rates per ton by about 137 per cent. For Massachusetts, whose traffic conditions most closely correspond with those of Europe, passenger fares in 1895 exceeded freight rates in the same way by about 72 per cent. On the other hand, for Prussia in 1895 the fare per passenger mile was 1.10 cents, while the rate per ton mile for freight was 1.44 cents, showing an excess of freight rates in the opposite direction of 31 per cent. For France in 1894, and probably the same relation holds at the present time, the excess of freight rates per ton over passenger fares per mile was similarly 133 per cent. This peculiar condition in America is due to the fact that American freight rates are lower apparently than those prevailing in Europe, while American passenger rates are very considerably in excess. Thus, whereas in 1899 the average fare per passenger mile for the United States was 1.925 cents, which is not very far from the British average, continental fares are considerably lower. Prussian fares, as in 1896, were particularly low, averaging 1.09 cents, as compared with 1.19 cents in Saxony, 1.27 in Bavaria, and 1.21 cents in France (1895). In Germany as a whole in 1896 the passenger fare per mile was 1.13 cents. In other countries of Europe the average is below this, as in Austria in 1896 it was 0.96 cent per passenger mile, and on the Belgian State railroads 0.95 cent in 1895, and in Russia in 1894 but 0.72 cent. India presents the lowest rates in the world, being less than 0.5 cent per mile, this figure, however, varying as between the standard and narrow gauge roads. Throughout all such comparisons, however, it should be steadily borne in mind that the conditions are widely different in speed, comfort, allowance of free baggage, etc.

The comparison of passenger rates in the United States at the present time with those formerly prevailing shows that, while there has been a decrease, the decline has been very variable in different parts of

[1] For further data consult Weyl, in Publications American Academy of Political Science, No. 230, 1898.

the country, and nowhere commensurate with the decline in the freight rates which is discussed in the succeeding section of this report. Thus while the revenue per passenger mile in 1890 was 2.167 cents, declining to 1.925 cents in 1899, the freight rates decreased in the same period from 0.941 to 0.724 cent in the latter year. For Massachusetts the average fare has scarcely decreased at all in the last 10 years. There is evidence to show that in many parts of the country passenger rates are fully as high as at the beginning of the decade. This striking fact that passenger fares have not decreased as rapidly as freight rates is not confined to this country alone. It has been clearly proven, for instance, that for Prussian railroads from 1844 to 1879 freight rates declined 79 per cent and passenger fares but 19 per cent. The explanation both in Europe and in the United States is not far to seek. A decrease in average rates, whether for passengers or freight, is, owing to the peculiar nature of the railroad business, proportionate more or less roughly to the increase in the volume of such traffic. Analysis of both European and American data clearly shows that, while the freight business has increased enormously, passenger business has not kept pace with its growth. Thus upon the Prussian railroads, while the number of passengers increased 29-fold from 1844 to 1879, the number of tons of freight increased 268-fold within the same period. Between 1884 and 1896 the number of passengers on American railroads increased 60 per cent, while the freight tonnage grew by 83 per cent. This increase in tonnage was also accompanied by an augmentation of freight density exceeding largely the increase in the density of passenger traffic. In other words, upon all railroads of the world it seems to be true that the freight business has become more and more important in proportion to the entire social service rendered. This increasing volume of freight business conducted at a decreasing cost offers the explanation for the decline of freight rates to the public so largely in excess of the decline in the passenger fares.

There are other reasons why passenger fares should not decrease as rapidly as freight rates. These are in the main incident to the nature of railroad competition. Passengers must necessarily be more or less directly transported from one point to another, while experience shows that competition in freight traffic may be exceedingly circuitous in route, goods even going hundreds of miles out of the direct line for transportation by water. The narrowing of the sphere of competition in the case of passengers has consequently operated to lessen the rate of decline. Another point to be considered in this connection is that no such increasing economies in the handling of passengers are possible as in the case of freight. Instead of decreasing the proportion of dead weight, which for passengers amounts to upward of 90 per cent, by any of the economies recently applied to freight traffic, it appears rather that the proportion of dead weight of equipment per passenger

is increasing owing to the necessity of providing more sumptuous accommodations. Bearing in mind all these facts, it appears not unreasonable to expect that the progressive decline of passenger fares should continually lag behind the decrease of freight rates. Whether, however, the decline has actually been commensurate with the decreasing costs of operation for this country is a matter which would require very careful analysis for determination.

THE DECLINE OF FREIGHT RATES TO 1899.

COMPARISONS OF REVENUE PER TON-MILE.

It is incontrovertible, as shown by many witnesses before the Industrial Commission, and by other authority, that freight rates have declined very greatly throughout the United States since the close of the civil war. On the other hand, it does not appear that any such corresponding reduction in passenger rates either in amount or extent has taken place in the same period. In respect to freight rates this may be shown in either one of two ways, either by comparison of the actual rates charged for specified service between given points throughout a series of years, or, secondly, by means of what is called the revenue per ton per mile. The latter is more commonly used as a basis for comparison and has many advantages. The revenue per ton per mile for a given road, or for the railroad system of the United States, is computed by dividing the total freight revenue for that service, whatever it may be, by the number representing the amount of freight in tons hauled one mile. Thus, for example, if the total freight revenue of a system of roads be $900,000,000, this having been received as compensation for hauling an equivalent of 90,000 million tons of freight one mile, the compensation actually received for each ton hauled one mile is obviously one cent. All that is necessary in order to compute the average revenue per ton-mile then is to know the total freight revenue and the amount of ton-mileage service. Computed in this way the average revenue per ton per mile for the railroads of the United States in 1900 was 0.729 cent. For 1890 this average revenue per ton-mile—that is to say, the average amount received for each ton of freight hauled one mile—was 0.941 cent. For 1880 it was 1.232 cents, and for 1870 1.889 cents. The diagram at page 280 represents the movement of this average revenue per ton-mile for a series of years, and evinces most clearly the progressive reduction in revenue to the railroads which has taken place.

This mode of comparison by means of the revenue per ton-mile has, as will be observed, one great advantage. It measures the actual return received by the railroads without regard to the published tariff, measuring accurately, therefore, the degree to which such departures

from such published rates took place. On the other hand, the average revenue per ton-mile is open to all the objections of a statistical average. It does not represent, either for any railroad by itself or for a system of railroads, the actual payment made for any given service. It covers all kinds of traffic, both through and local, as well as of high and low grade; that is to say, it makes no distinction between service rendered in the transportation of dry goods between local stations and of coal or grain hauled for long distances. Obviously, therefore, it will vary from year to year, or as between different roads, according to the proportions of traffic of different kinds which may happen to prevail at that time. Even on a given road the revenue per ton-mile varies widely as between different classes of commodities. Thus on the Illinois Central Railroad for the fiscal year 1900 the revenue per ton-mile was 0.136 cent on wheat, 0.790 cent on flour, 4.267 cents on sugar cane, 0.309 cent on soft coal, 1.148 cents on stone and sand, 2.238 cents on furniture, 3.165 cents on merchandise. The average of all commodities carried on this road being 0.935 cent, the latter figure, compounded of such various ingredients, really represents the return for no one of any of the services performed. The same objection to comparisons of revenue per ton-mile holds good as between different roads. Thus, for example, the revenue per ton-mile on a road whose traffic is largely of low grade will be necessarily low. On the Baltimore and Ohio, for instance, for 1899 it averaged 0.39 cent for all the traffic that road carried. This is the lowest average reported by any large railroad system in the United States for that year, except the Chesapeake and Ohio, on which the average ton-mile revenue was 0.362 cent. The reason for this is obviously because the bulk of the tonnage on these roads consists of soft coal, grain, brick, sand, and other commodities on which the freight charges must necessarily be exceedingly low in order that the freight shall move at all. To compare this revenue per ton per mile with a similar figure for a high-grade road, such as the New York, New Haven and Hartford, which in 1899 reports a revenue per ton per mile of 1.411 cents, is obviously misleading and fallacious. It does not mean that the latter road necessarily charged more for the same service than the Chesapeake and Ohio. Its higher revenue per ton of freight moved one mile is due in large measure to the fact that much of its tonnage is of high-class merchandise.

The proportion of local to through business upon a railroad or for a system of roads is also an important consideration in determining the average revenue per ton-mile. Obviously it costs much more to handle local business, the terminal expenses being far greater in proportion, while at the same time a larger proportion of the freight moves in small lots at less than carload rates. As illustrative of the difference in revenue to the railroads, the Illinois Central Railroad in 1900 reports an aver-

age revenue per ton-mile on through freight of 0.48 cent, while for local freight the corresponding figure is 1.17 cents, the average of both being 0.56 cent. Similarly, upon the Lake Shore and Michigan Southern, the revenue per ton mile for through and local business is, respectively, 0.417 cent and 0.562 cent, giving an average of 0.49 cent. It is apparent from this that any accurate determination of the rate of charge in general must take account of such facts as these. The Southern Pacific or the Chesapeake and Ohio railroads, with very little local traffic and a business dependent for prosperity almost entirely upon the long haul, will conduct transportation at a materially different figure from roads in densely settled territory. This factor, probably, determines to some degree the difference in average rates per ton mile for different sections of the United States, and certainly it appears in any comparisons with European countries. For New England in 1899 the average revenue per ton mile was 1.14 cents; for the Middle States, 0.57 cent; for the Central and Northern States, 0.8 cent; the Southern Atlantic, 0.68 cent; Gulf and Mississippi, 0.80 cent; Southwestern, 1.02 cents; Northwestern, 0.98 cent, and Pacific roads, 1.03 cents.

The considerations above mentioned are of the utmost importance in any comparison of freight rates, either at different periods or as between different countries. Without knowing the proportions of local and through business, and especially the proportion of high and low grade freight moved long distances, no validity whatever attaches to comparisons of average revenue per ton mile. The development of the last twenty years in the United States has been in favor of a great increase in low-grade traffic. This is shown by the following table, giving the per cent of tonnage in various classes upon the trunk lines from New York to and beyond Chicago.[1]

Per cent of tonnage in each class of freight on trunk lines, west bound.

[Senate Finance Committee Report on Prices, 1898, pt. 1, p. 437.]

Class.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892
1.....	30.4	31 3	26.4	25.1	28.1	29.5	25.6	24.8	23.3	18.9	19.3	22.2	21.0	19.4	19.9
2.....	6.9	7.2	6.7	6.4	6.2	8.0	7.6	7.1	7.9	7.5	7.2	6.9	6.4	5.7	5.4
3.....	4.8	5.0	4.4	5.1	4.2	4.9	4.1	4.2	5.2	8.1	10.4	12.8	12.3	11.4	11.3
4.....	57.9	48.7	50.1	53.7	58.9	42.8	32.9	29.3	20.9	14.1	13.5	13.0	12.7	11.1	10.4
5.....	0.0	6.5	10.6	9.7	7.6	14.8	29.8	34.6	42.7	16.1	9.2	7.8	10.0	9.1	9.6
6.....	0 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.....	35.3	40.4	37.3	37.6	43.3	43.4
Special.	0.0	1.3	1.8	0.0	0.0	0.0	0.0	0.0	.....	.....	.....	.....	.....	.....	.....
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

From this it appears that "60 per cent of the tonnage is now carried in fourth, fifth, and sixth classes. * * * Prior to 1886 no considerable number of articles were permanently assigned to the fifth and

[1] This statement conflicts only in appearance with the prior one at page 265. These data refer solely to west-bound business on the trunk lines alone, where business is always peculiar. Not too much reliance can be attached to direct comparisons, also, because of changes in classification, to be described later.

sixth classes; they embraced usually a few commodities which had been assigned a special rate." Further consideration of this table shows that first-class freight, forming 30 per cent of the tonnage in 1878, declined to less than 20 per cent in 1892, at the same time sixth-class freight increasing from nothing to 43.4 per cent in 1892. Fourth-class freight declined during the same period from 57.9 to 10.4 per cent. These figures simply mean that a great deal of traffic is now carried upon American railroads for long distances which a generation ago it was believed could not be profitably moved at all. The utility of the railroad service, once supposedly confined entirely to freight of the higher classes, has been gradually extended until to-day there is no commodity too cheap to be handled with the improved facilities. This vast increase in the amount of low-grade traffic is undoubtedly responsible to some degree for the apparent decline of freight rates so often instanced. Fortunately upon this point we have the specific testimony of traffic managers of long experience. On the other hand, in justice to the railroads it must be admitted that the proportion of local business at high rates, which would tend to increase the average revenue per ton mile, has steadily increased with the growth of the country; and, moreover, as has already been shown, in times of exceptional prosperity the movement of high-grade freight has increased in more than its due proportion. Nor are these facts adduced in criticism of American railroad policy. They are simply intended to draw attention to the fact that, while reductions of freight rates have undoubtedly been considerable, they have not been as great as is oftentimes plausibly stated. As for comparisons with foreign countries, they are practically invalidated by the difference in local conditions, as, for instance, in England, where local delivery is involved. In the United States such service is charged in addition, either as drayage or express.

In addition to the considerations above mentioned, comparisons of average revenue per ton per mile must always be interpreted with regard to the volume of traffic handled. Any comparison of freight rates or revenue per ton per mile which is not interpreted in the light of increase in the volume of business transacted is apt to be misleading. This is due to the fact that such increase in the volume of business enables the railroad to perform the service at a constantly decreasing cost. Reliable computations show that from two-thirds to three-fourths of the expenses of railroad operation are entirely independent of the amount of traffic moved. This being the case, such expenses having once been covered, it costs the railroad for additional business little more than the mere cost of conducting transportation, as it is called. As a result, any increase of business above a certain figure yields far more than a proportionate rate of profit. Applying this law to the case in hand, justice to all parties concerned demands not only that the revenue per ton per mile—that is to say, the amount

which the public pays for transportation—be determined, but also that the corresponding reduction in the cost of performing such service to the railroad shall be known. Unfortunately this is not capable of exact determination, but it can be approximately computed. Having established the fact incontrovertibly that there has been a very great and progressive decrease in the revenue to the railroads, it now becomes important to determine whether by any means the railroads have, through reduction in the cost of doing business due to its increased volume, been enabled to sustain a constant rate of return upon the capital invested. This is a point which has been neglected by most authorities in attempting to determine the reasonableness of such reduction as has taken place.

Perhaps the simplest way of arriving at some conclusion in this matter is to compare the increase in the ton mileage of freight hauled with the increase in operating expenses to the railroads over a series of years. This has recently been done by a competent authority, with the result shown in the following table:

Relative increase in traffic items and in operating expenses from 1880 to 1898, inclusive.

[From Report of Commission to Investigate the Postal Service, 1901, p. 220.]

Items.	1880.	Average from—			
		1881–1885, inclusive.	1886–1890, inclusive.	1891–1895, inclusive.	1896–1898, inclusive.
Ton miles of freight	100	134.36	208.23	264.90	313.81
Passenger miles of passengers	100	138.12	189.46	233.15	224.65
Ton miles of mail	100	153.34	247.69	429.16	555.48
Operating expenses	100	132.75	174.39	215.80	221.42

This computation shows that, assuming the ton mileage of freight in 1880 to be 100, it increased in each of the four periods specified to 314 in 1896–1898. At the same time, assuming operating expenses incident to this business in 1880 as 100, the operating expenses necessary to move more than three times the tonnage in 1896–1898 are represented by only 221. In other words, to transport more than three times the amount of freight in the latter period it required a direct expenditure in operating expenses of little more than twice the same amount of money. This being the case, it is obviously reasonable that some considerable reduction of freight rates should have taken place for no other cause than this, simply that there was a vast increase in the volume of the business moved.

COMPARISON OF LOCAL AND THROUGH RATES.

The assertion is frequently made that, while there has been undoubtedly a progressive decrease in freight rates in the United States during the last thirty years, these decreases have been very unequally distributed. In other words, it has been maintained that the decreased

rates have been entirely abnormal upon the through business from interior centers, such as the movement of grain or other food supplies from Chicago to the seaboard; but that, on the other hand, local rates have decreased very little, if at all, in the same period. Coupled with this is the allegation that while through freight rates in the United States are lower than in foreign countries, local rates for short distances are, as a matter of fact, considerably above those prevailing in Europe. This allegation if true is of profound significance, owing to the fact that the larger proportion of freight business throughout the country is of a local character. Thus, for instance, the annual report for 1899 of the New York Central indicates about 4,000,000 tons of through freight in both directions as against five times that volume of way freight in both directions. On the Pennsylvania road it appears that the proportion of local freight was even higher, rising to 90 per cent in 1890. On the Illinois Central for 1900 local freight outweighs through freight in the proportion of 5 to 1, some 84 per cent of the freight carried being of a local character. On the other hand on some roads—such as the Chesapeake and Ohio, for instance—the opposite extreme is found, competitive freight constituting about four-fifths of the total. It is certain that the definition of local as distinct from through freight differs upon various systems. On the other hand, while the volume is greater, actual earnings on through business vastly preponderate. Fewer tons are moved, but the distances are so much greater that the total charge on each ton aggregates a larger amount. Thus on the New York Central road through freight earnings outweighed the way business from a revenue point of view three times over. Through ton mileage aggregated nearly eight times that of local traffic, although at a ton-mile revenue of considerably less than half. The only point to be established here is that local freight rates are of great importance, both to the public from the point of view of rates and to the railroads from the point of view of revenue.

The trend of testimony appears to be that such local rates have decreased very unevenly in different parts of the country. Apparently one of the first and most beneficent results of the enactment of the act to regulate commerce, in 1887, was a reduction of local rates in various parts of the country, in order to bring the rate adjustment into conformity with the long and short haul clause. This was peculiarly the case in the Northeastern or trunk-line territory. It does not seem to have occurred in the Southern States, where the long and short haul principle has never been accepted in its entirety. The most comprehensive report upon the subject concludes that local rates have in various parts of the country, during the last ten or fifteen years, been reduced from 10 to 50 per cent.[1] Returns from various State

[1] McCain, in Senate Finance Committe Report on Prices, 1893.

railroad commissions interrogated by the Industrial Commission i the subject show highly variable results. From Mississippi it app that "local freight rates in this State have been materially lowerec the last four years, especially in the lettered classes," while from i adjoining State of Alabama it appears that "local rates on freig have decreased very little in the last five or six years, and have nc decreased in proportion to the decrease made in interstate rates." I New England comparison of actual freight rates does not indicate any very considerable reduction, the absence of competition in this section being, perhaps, in part responsible for this result. A comparison of published freight rates in Southern territory, without making allowance for departures from such tariffs, apparently shows a very much smaller reduction than in other parts of the country. It is also apparently true that the reduction of cotton rates in this section, while considerable, has been much less rapid than that of the rates upon grain from Chicago to the seaboard in either direction.[1]

The appended diagram shows the progressive decline of freight rates during the last 30 years. It will be observed that two distinct methods have been followed. The first is based upon ton-mileage revenue, and is shown by two curves, for Massachusetts and the United States, respectively.[2] The scale by which these are to be interpreted is indicated upon the left-hand side of the chart. A second mode of showing the same fact is adopted in the curve entitled "Actual rate index," and for which the scale is given on the right-hand side of the sheet. This rate index is simply the average of the actual published rates for a number of specific points and commodities.[3] It differs in principle from the ton-mileage revenue curves, in that it concerns merely the published rates, taking no account of rebates or departures from those rates in actual practice. A comparison of its curves with those of the ton-mileage curves shows a more abrupt decline from about 1878 to 1886, since which year the course of all three curves is about parallel. Its irregularity is also significant as illustrating the violent fluctuations which are offered by the published rates prior to 1887. Judged by this curve, the situation has been more settled since the enactment of the act to regulate commerce.

SUMMARY.

Summarizing, we may conclude that during the period from 1870 to 1900, on the whole, a substantial and very widespread reduction of freight rates has taken place. This, as might be expected, has been far less marked in local than in through or competitive business.

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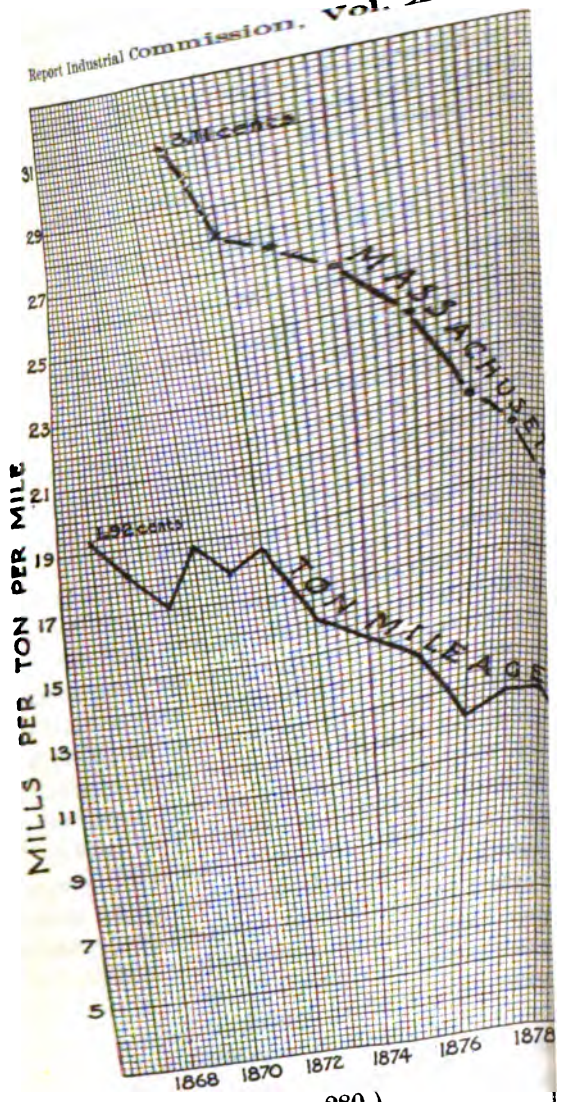
[1] Crowell, Report of Industrial Commission, Vol. VI, p. 10.

[2] For the United States after data by H. T. Newcomb, Department of Agriculture, Miscellaneous Bulletin No. 15, 1898.

[3] After date of J. R. Commons, Bulletin, Bureau of Economic Research, No. 1, July, 1900.



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This steady downward movement of freight rates has apparently been interrupted but once by any attempt at a general advance of rates. The railroads of the country in 1894 evinced a concerted disposition to increase freight rates, apparently to compensate for the depressed condition of the industry as a whole. The times, however, did not warrant such action and it apparently did not operate to prevent the continued fall in the average revenue per ton-mile. It remained for the prosperous times of 1900 and 1901 to invite once more such action on their part, and a notable increase in freight rates all along the line has followed as a result.

THE GENERAL FREIGHT RATE ADVANCES OF 1900.

ADVANCES BY MEANS OF CLASSIFICATION CHANGES.

The long continued and steady decline of freight rates since the civil war has given way in 1900 to a marked advance in the published rates. No similar attempt, with the exception, perhaps, of the year 1894, has been made to arrest, by concerted action of all the roads of the country, this progressive decline, due to a considerable degree, as it has appeared, to competition between the railroads themselves. The peculiarity of these advances of 1900 is that they have been made, not by direct changes of tariffs, but by modification of the freight classifications. Merchandise, as is well known, is thrown into various classes according to its value, bulk, risk, etc., and the charges are graded accordingly. Consequently the transfer of a particular commodity from one class to another may operate materially to increase the rate of freight charge. Thus, for instance, the freight rate from New York to Atlanta by any all-rail line is fixed by common agreement at $1.14 per 100 pounds. The rate on second class is 98 cents, on third class 86, on fourth class 73, etc. It is apparent that if goods, axes for example, which were formerly fourth class, are by a change in classification made third class, this operates to increase the rates between these points specified from 73 to 86 cents. Moreover, since these classifications, as will be shown later in this report, are agreed upon by all railroads operating within each specified territory, a change of classification operates simultaneously to increase rates throughout the entire section. The same result may be attained also by changing classification according as the goods are shipped in car loads or less than car-load lots. Thus, if a commodity was formerly classified as fourth class when shipped in car loads, and as third when in less than car-load lots; if the distinction between these two classes of shipment be removed and all are classified as third; whether in large or small quantity, this likewise results in an increase of the freight rate to the large shipper by the difference in the rate between third and fourth class. Or, again, as will be shown, certain commodities are sometimes exempted from classification by a

special or "commodity" rate, as it is called. This commodity rate is usually very much below the rate for classified merchandise. Thus corn by the Official Classification is sixth class, and the rate from Chicago to New York for that class is 25 cents. If, however, corn actually moves under a commodity rate of 17½ cents per 100 pounds, the cancellation of the commodity rate immediately operates to put corn in class six, thereby raising the rate to 25 cents.

SUMMARY OF CHANGES.

The general advance of 1900 was inaugurated by the trunk lines operating north of the Ohio River. On January 1, 1900, notice was given that a new classification, known as "Official Classification No. 20," was to supersede No. 19. An investigation made by the Interstate Commerce Commission showed that 824 changes were made by this action, of which 818 produced an advance, and 6 a reduction in the rate. The following table shows the distribution of these advances:

ADVANCES.

	Per cent.
434 ratings advanced	42.8
214 ratings advanced	30
100 ratings advanced	20
32 ratings advanced	15.3
17 ratings advanced	16.6
10 ratings advanced	50
6 ratings advanced	100
2 ratings advanced	25
2 ratings advanced	33.3
1 rating advanced	85.7
818	

REDUCTIONS.

3 ratings reduced	30
3 ratings reduced	14.3

The percentages here computed were made upon the basis of a shipment from New York to Chicago, since all the rates between intermediate points are figured at a percentage of that rate. As indicative of the amount of these changes the following rates may be cited: New York to Chicago rates on starch and bicycles per carload advanced $10. Canned goods increased 15 cents a hundred pounds between the same points. Rates on vehicles, less than carloads, rose over 50 per cent. Coke increased 55 cents a ton. Advances seem to have been particularly marked on iron and steel products, groceries, agricultural implements, etc. This material increase of freight rates aroused a storm of protests from all parts of the country, and in response the classification was modified on March 10 by allowing discounts of a somewhat complicated character from the new classification rates. Fifteen per cent reduction was allowed from second-class

rates and 20 per cent from third, on less than carload rates, however, exclusively. It appears that this reduced the average advance from 35.5 per cent to about 21 per cent, which, in the opinion of the Interstate Commerce Commission, represents substantially the average increase over the freight rates prevailing in trunk-line territory previous to January, 1900.

The action of the railroads operating in trunk-line territory—that is to say, north of the Ohio and east of the Mississippi—was promptly followed by carriers in other parts of the country. Thus, on January 25, the railroads operating west of a line from Chicago to St. Louis, and from St. Louis to the Gulf, promulgated a new Western Classification, No. 30, to supersede No. 29. By this action, according to the Interstate Commerce Commission, 257 changes were made, 240 representing an advance and 17 a reduction of the freight rate. On the basis of the rate from Chicago to Missouri River points, such as Omaha and Kansas City, the average advance was 47.4 per cent, the average reduction being 31.7 per cent. As indicative of the degree of these changes, the annual reports of companies for the fiscal year to July, 1901, are significant. Thus the Chesapeake and Ohio Railway reports an increase in revenue per ton mile from 3.43 mills in 1900 to 3.88 mills in 1901; and upon coal traffic alone, from 2.02 mills to 2.72 mills for the same period.

The Southern railroads operating south of the Ohio and east of the Mississippi, acting through the Southern Classification Committee, followed the action of the other roads by substituting Southern Classifications Nos. 26, 27, and 28 during 1900. The average advance incurred, according to the Interstate Commerce Commission, was about 30 per cent upon 531 commodities, with an average reduction of 26 per cent upon 105. The changes hereby made seem to have been considerably more complicated than in other parts of the country, as will appear from the testimony of the chairman of the Southern Classification Committee before the Industrial Commission.[1] It is indubitable, however, that the first general revision made in No. 26, which took effect on the 1st of January, 1900, did not operate to increase rates extensively, except upon iron and steel products. These, however, were substantially increased. The representative of the Southern Hardware Jobbers' Association states that over one-half of their commodities are affected, in some cases by as much as 50 per cent. The real advance upon all other commodities was made by the succeeding classification, No. 27, which took effect upon the 1st of June. No. 28, following six months later, made more reductions than advances, and seems to have been rather a concession to public protest, somewhat of the nature of the discounts allowed upon Official Classification No. 20, above mentioned.

[1] McGovern, Reports of Industrial Commission, Vol. IX, pp. 652 *seq.*

In addition to the general changes simultaneously made upon all the railroads of the country, as above described, a few others of a minor or local character have also been made. As indicative of these may be instanced the substantial reduction in rates on steel products from Pittsburg to various points, effective on the 1st of February, and the reduction in Southern territory, upon rates on food stuffs, effective on the 1st of March, 1901. On the other hand, a substantial advance has been made in Southern territory, effective on the 1st of July, 1901, in the rates upon cotton fabrics. This immediately affects one of the leading manufactures of the South. By this action cotton goods are transferred from fifth to fourth class. Figuring on the basis of New York-Atlanta rates, this means an increase per 100 pounds from 60 to 73 cents. The latest increase is in trunk-line territory, wherein since July 1, 1901, the minimum carload is greatly increased, viz, from 20 to 80 per cent.

In this connection an important point deserves consideration. From unpublished data, and also from advance sheets of Poor's Manual of Railroads for 1901, it appears that the average ton-mile rates for the United States have not greatly increased in the year 1900 over the preceding years. Thus, the average for 1898 was 7.58; for 1899, 7.26; and for 1900, 7.46 miles per ton-mile for the United States. The same relation, namely, a slight advance for 1900 over 1899 is shown by territorial classification of ton-mile rates. It is alleged that on this showing it is impossible to support the contention that the radical advance of freight rates, as above mentioned, has taken place. As against this contention it should be noted that many of the advances of rates did not take place until well along in the year 1900, and consequently did not proportionately increase the figure for that year. This objection is overcome, so far as individual roads are concerned, by additional data comparing the average ton-mile rates for 1900 with 1901. Of fifteen railroads operating for the fiscal year ending June 30, 1901, three show a decrease in the ton-mile revenue amounting, in the case of the Chicago Great Western road, for instance, to 11 per cent. Twelve lines show increased average ton-mile rates for 1901 over 1900, the amount of increase varying from about 1 per cent in the case of the Wabash to 17 per cent on the Buffalo, Rochester and Pittsburgh. As against the validity of these data, it should be noted that the comparison is again between 1901 and the year 1900, which, while not reflecting fully the advance in rates as above stated, certainly represents some portion of it. A true comparison, to be effective, should be instituted between the years 1899 and 1901.

The interpretation of the above-named data which at first suggests itself is that there has been no such material advance in freight rates as we have described. Added force is given to this contention by the presumption that the heavy movement of local freight and of higher classes of merchandise in the recent prosperous years would tend

rather to magnify any increased freight rates than to diminish them, as shown by ton-mile revenue. On the other hand, the movement of so-called "company freight" has been unusually heavy during this period of abnormal expenditure for betterments. This freight moving free adds, of course, to the number of ton-miles moved without addition to the revenue, and proportionately reduces the ton-mileage charge reported below that which actually prevails on service to shippers. More important than all these considerations is the corollary which the statistics suggest. There can be no question of a substantial increase of *published* freight rates all over the country. Our data establish this beyond question. If, then, the ton-mile revenue reported by the roads indicates a very much less percentage of increase, *the inevitable conclusion is that a great deal of freight is moving at less than the published rates.* This follows from the fact that ton-mile revenue is based entirely upon the actual income to the roads and has nothing whatever to do with the published rates as such. This interpretation, if true, is of profound significance. Its bearing upon our subsequent discussion of the existence of preferential and secret rates needs no further explanation.

DISCUSSION AS TO JUSTIFICATION OF ADVANCES.

Summarizing, we may conclude that the advance in *published* freight rates in 1900 upon all the railroads of the country is probably not less than 25 per cent. This action seems to have been taken, as the railroads assert, in order to recover ground lost during the period of depression of 1893–1897. It does not appear, however, from consideration of the movement of ton-mile revenue that this period witnessed any abnormal reduction of freight rates. The progressive fall seems to have gone on continually since 1890, although at a very much less rapid rate, as we have said, than prior to that time. Judging by the movement of ton-mileage rates, it appears that the advances since 1899 have been substantial and general. Not only has the advance in freight rates since 1899 been considerable, but it appears also to have been rather unequally distributed. Thus, for example, a large majority of the changes seem to have been incident to the transfer of freight from the fourth to the third and from the third to the second class, thereby widening the difference between the rate upon carload and less than carload lots. All but 85 of the changes in the Official Classification were in less than carload rates. In some cases, as confectionery, carload rates were reduced while less than carload were advanced. This would seem to result in a disproportionate increase in the rates upon small shipments. In other words, while most of the carload lots remain unchanged, the increase in freight rates has fallen extensively upon shipments in small bulk. It also appears from testimony taken before the Interstate Commerce Commission in December, 1899, that the change in classification in trunk-line territory was made without

extended investigation by the committee in charge, but in response to directions requesting such changes as would produce the best possible increase in revenue. The roads justified their action, however, by an appeal to the general increase in the cost of railroad operation incident to the high prices of 1899. They failed to reckon with the enormous increase in tonnage which the prosperity of these years produced. In order to determine the reasonableness of their contention, it will be necessary to consider the relation of these different factors a little more in detail.

THE EFFECT OF INCREASED VOLUME OF BUSINESS UPON RAILROAD EARNINGS.

A railroad presents one of the clearest examples possible of an industry subject to the law of increasing returns—that is to say, an industry in which the total cost of operation increases less in proportion than the amount of business transacted. This means, conversely, that the net returns increase more rapidly than the expansion of traffic. Thus, for example, a large part of the expenses of a railroad are incurred primarily for maintenance of way and equipment. These expenses do not vary in any considerable degree with the amount of traffic transported; so that traffic beyond a certain point costs but little more than the mere expense of moving the trains. In other words, from two-thirds to three-fourths of the expenses of a railroad go on independently of the amount of freight or passengers moved. We may illustrate this by a computation made by Acworth, an English expert:

> In a hundred units the traffic costs the company 100 shillings for interest and expenses. It is probably a fair estimate to say that 1,000 units will cost, not 1,000, but 325 shillings. The figures are arrived at as follows: Interest on capital remains invariable; this, as we have seen, represents one-half the total cost. Of the working expenses fully one-half, according to estimates made by experts in different countries, which largely agree, remain constant. The remaining half is taken to increase proportionately to the increase of traffic. The old expenditure for the 100 units was, then, 50 plus 25 plus 25; the new expenditure is 50 plus 25 plus 250, equals 325 shillings.

The same authority illustrates this by comparison of the Midland and Great Western Railway of Ireland and the Lancastershire and Yorkshire Railroad. These two are of about equal length, approximately 530 miles. The latter carries 40 times the traffic of the former road, and yet its expenses for maintenance of way are only 8 times as much.

This law that an increase in the volume of business upon a railroad does not involve a corresponding expense in cost, may be illustrated in another way. Comparing the years 1899 with 1894 we find that the gross earnings of the railroads of the United States increased by 22 per cent. This involved an increased expense of operation, however, of only 17 per cent. A similar comparison of 1900 with 1894, there

having been an enormous expansion of business, shows an increase in gross earnings of 38 per cent, involving increased expenditures of only 31 per cent. This fact would be all the more striking could we exclude the enormous expenditures for betterments which have been charged to operating expenses during the last year. Working over these results by comparison per mile of line, it appears that the rate of increase in earnings per mile of line for five years is approximately double the rate of increase of operating expenses per mile of line. Applying this law, for instance, to a particular road, the Missouri Pacific, by comparing the lean year 1894 with the prosperous year 1899, we have an increase of gross earnings for this road of $6,250,000; this expansion of business, however, cost only a trifle over $3,000,000 more for expenses of operation. Bearing in mind that on the entire traffic of this road the proportion of operating expenses to operating income was 75.9 per cent, the greatly lessened cost of performing additional business becomes at once apparent. This explains why upon many of the railroads the increase in net earnings has been more than in proportion to gross earnings, although, as has already been shown, the average revenue per ton-mile has steadily decreased. Making still another comparison for the Chicago, Rock Island and Pacific Railway, as between 1895 and 1900, we find that gross earnings have increased 45 per cent, while the increase in net earnings has been 73 per cent. The Chesapeake and Ohio Railway, able to earn net only $2,206,000 in 1891, with a ton-mile revenue of 5.25 mills, now, in the fiscal year to July, 1901, earned more than twice as much, at a revenue per ton-mile of only 3.43 mills.

An interesting comparison with the previous decade, 1870 to 1880, exemplifies this relation still further. The gross earnings of the trunk lines of the United States decreased very greatly per mile of line, but at the same time the net earnings steadily increased. This was due primarily to the great volume of business developed, the ton-mileage increasing more than threefold during these ten years. It happened despite the fact that the mileage of line during the same time had more than doubled. The following decade, 1880 to 1890, was represented by an increase of only 82.7 per cent in mileage, while the number of tons of freight hauled one mile increased by 132 per cent. Density increasing in this way, a corresponding ability to carry at a lower rate per ton was a necessary result. So indisputably has this law—that an expanding volume of business may profitably be carried at a continually lowered cost—been proved, that it is estimated by so competent authority as the Engineering Review that, provided sufficient tonnage be available for 2,000-ton freight-train loads, a cost of one mill per ton-mile can be attained. Its significance may be realized from the fact that the lowest revenue per ton-mile reported for the United States is 2.21 mills per ton-mile for the long-haul soft-coal business of the Chesapeake and Ohio Railway. This does not, of

course, imply that any railroad in actual operation carrying all kinds of freight, including a large proportion of local traffic, can in the immediate future approach this result. It is intended only to show that, provided the volume of traffic be large enough, the cost per ton-mile may be reduced even lower than it is at present without injustice or loss to the owners of the roads themselves.

ENHANCED COST OF OPERATION IN 1899–1900.

The principal justification advanced by the railroads of the United States for their increase of freight rates in 1900 is that the cost of operation is greatly enhanced by the increased expense due to the general higher price level. It can not be denied that this plea is based upon substantial foundation. The long-continued and steady fall of prices which began in 1873 has been rudely interrupted by increases all along the line in 1899 and 1900. This has been peculiarly marked in the case of the supplies largely consumed by the railroads, namely, coal and iron and steel. Thus, for instance, the steady fall in the price of steel rails per ton from about $92 in 1870 to approximately $32 in 1890, and during the late period of depression to $18, has been succeeded by a sudden and very marked rise. Steel rails were among the first to be affected by the present wave of prosperity, the price advancing to $35 a ton at the mill in 1899. This was followed by a recession to $26 a ton, with a further rise in May, 1901, to $28. Bearing in mind that many improvements in trackage were necessarily postponed from the lean years of depression, so that an enormous demand made itself felt, the additional cost for all improvements undertaken may be appreciated. The consumption of Bessemer steel rails in 1899, for instance, was 2,240,000 gross tons, the year nearest approaching this figure for magnitude of consumption being 1887. Coal, likewise, has very considerably increased in price, this forming one of the heaviest items of expenditure. In this connection it is interesting to observe that one of the primary causes of the present depression of the railroad industry in England has been the marked advance in the cost of supplies in that country without a corresponding increase in the freight rates. Thus, according to the London Economist, coal expenditures during the latter half of 1900 for British railroads increased 46.6 per cent over the corresponding period of 1899, which in turn was 22 per cent in excess of the latter half of 1898. The general increase in cost in railway supplies of all kinds in England is estimated at 7.7 per cent.

As illustrative of the great increase in the cost of material and supplies of 1900 as compared with 1897, the following statement submitted to the Mississippi Railroad Commission by P. J. McGovern, chairman of the Southern Classification Committee, may be inserted. This shows a percentage increase in the price of such staple supplies as

steam coal of 44 per cent, of cross-ties, 20 per cent, of iron and sheet steel, 48 per cent; of nails, 109 per cent; of lubricating oil, 120 per cent, and so on.

Comparative statement of cost of material and supplies in 1897 and in 1900.

	1897.	1900.	Per—	Percentage of increase.
Axles, steel	$0.0130	$0.0300	Pound	131
Angle bars, track fastenings	.0130	.0235	do	81
Antimony	.08	.10	do	25
Brass:				
Car journal	.085	.14	do	65
Engine	.11	.1975	do	79
Brake shoes	.01	.013	do	30
Brooms (straw)	1.65	3.00	Dozen	82
Bolsters—I beam—structural steel	.0165	.0238	Pound	44
Bolts:				
Machine (1 × 10 example)	4.48	11.20	Hundred	150
Track	.0195	.0325	Pound	67
Carriage (½ × 3 example)	.56	.135	Hundred	141
Brushes, paint	15.00	17.10	Dozen	14
Bunting	3.50	7.00	Roll	100
Buckets, galvanized iron, water	1.65	2.10	Dozen	21
Chain, wrought, brake	2.95	6.25	Hundred	112
Castings:				
Gray iron	1.25	2.00	do	60
Malleable iron	3.00	4.00	do	33
Cement, Portland	1.85	2.15	Barrel	16
Coal:				
Steam	.80	1.15	Ton	44
Blacksmith	1.25	1.60	do	28
Anthracite	4.05	5.10	do	26
Cross-ties	.20	.24	Each	20
Coke	2.50	5.60	Ton	128
Copper	.12	.1775	Pound	48
Couplers, automatic car	6.00	8.25	Each	37
Duster, feather	1.85	3.50	Dozen	89
Flues, boiler	.11	.21	Foot	91
Iron, bar	1.00	1.95	100 pounds	95
Iron and steel, sheet	1.65	2.45	do	48
Lanterns, hand	3.25	5.50	Dozen	69
Lead, pig	3.40	4.90	100 pounds	44
Lumber	7.50	12.50	1,000 feet	67
Nails	1.15	2.40	100 pounds	109
Oils:				
Car, lubricating	4.65	10.25	100 gallons	120
Mineral seal, illuminating	8.50	10.75	do	26
Engine, lubricating	4.75	11.00	do	131
Headlight, illuminating	6.00	9.50	do	58
Valve, lubricating	25.00	31.00	do	24
Signal, illuminating	28.00	33.00	do	18
Linseed, paint	41.00	68.00	do	66
Gasoline	.10	.12½	Gallon	25
Paint, building and freight car	.65	.81	do	25
Plush	1.12	1.88	Yard	67
Rails, steel	18.00	35.00	Ton	94
Rivets, boiler	2.25	3.40	100 pounds	58
Rope, manila	.0525	.1525	Pound	190
Steel:				
Spring	.02	.045	do	125
Tool	.05	.075	do	50
Spikes, track	1.35	2.44	100 pounds	135
Springs, car	2.65	3.00	do	89
Solder	9.50	19.00	do	100
Shovels	5.25	8.88	Dozen	70
Switches	20.30	31.35	Each	54
Frogs	12.85	24.80	do	79
Switch stands	9.90	14.05	do	42
Tires:				
Locomotive driving wheel	4.50	5.50	100 pounds	22
Coach wheel	26.50	33.00	Each	24
Tin:				
Block	14.00	30.50	100 pounds	118
Sheet	6.50	10.50	Dozen	61
Turpentine	.28	.49	Gallon	75
Wheels:				
Cast iron	5.00	5.25	Each	5
Steel tired	34.00	55.00	do	62

Similar changes as between the years 1900 and 1901 are manifested in the last annual report of the Rock Island Railroad Company, giving its average prices for each of the two years ending on March 31. Steel rails rose from $22.64 per ton to $28.48, or 25.8 per cent; spikes from 1.527 cents per pound to 2.477 cents, an increase of 62.21 per cent; and ties from 39.8 cents to 50.5 cents, or 26.88 per cent increase. According to these data it appears that a substantial reason for demanding an increased return for transportation existed at that time. The only question is as to whether the rate of increase of the freight charge was justly proportioned to the added cost of transporting the business when the huge increase in volume was taken into account. The average cost of transportation was undoubtedly enhanced. Thus, as given by Henry C. Adams, statistician of the Interstate Commerce Commission, the average cost of running all trains per mile, which had fallen from 96 cents in 1890 to 91.8 cents in 1895, rose to 98.4 cents in 1899, and in 1900 increased still further by 9 cents per mile, to $1.07. These are the only years since 1890 when this figure has exceeded 98 cents. Against this, following the argument above suggested, should be set the fact that while the trains thus cost about 9 per cent more to haul per mile, their paying load measured by revenue per train-mile has increased in an even greater proportion, viz, by upward of 10 per cent. This may be demonstrated in another way. From the same authority we find that while the number of tons of freight carried one mile increased in 1899 over the year before by 8.41 per cent, the freight-train mileage increased by only 0.81 per cent. Likewise the ton mileage of 1900 represented an increase of about 14 per cent, as compared with a freight-train mileage increase of about 3 per cent. In other words, the volume of traffic increased 10 times as fast as the number of miles run by freight trains; with a resulting revenue per train mile in 1900 of $1.65 as against $1.50 in the preceding year. This being a fact, it follows as a matter of course that the average cost of running a train should increase entirely apart from any increase in the price level either for supplies or wages.

This point may be considered in still another way, by comparing the net income per train-mile as well as the percentage of cost of operation to operating income. This has been recently done by the Interstate Commerce Commission for the three trunk lines—the New York Central, the Pennsylvania, and the Baltimore and Ohio—with the result that the percentage of operating expense to freight income is shown to be less for the year 1900 than for 1899. At the same time the net earnings per mile of road increased appreciably. This increase on the Pennsylvania for the last two years amounted to 20 per cent, and for the Baltimore and Ohio to 75 per cent. From consideration of such facts as these it appears that the advances in freight rates of 1900 were

considerably in excess of the requirements for sustaining net earnings at a constant figure in the face of the enhanced price of materials and the higher level of wages.

IMPROVEMENTS IN EQUIPMENT AND METHODS OF OPERATION.

No account of the railroad system of the United States would be complete without reference to the marked advance which has been made in economy of operation. This has been primarily effected, first, by improved track and right of way; secondly, by the increased efficiency of cars and locomotives, and, thirdly, as a consequence, by the greatly increased revenue by train loads. To this should be added the favorable conditions induced by the equality of traffic moved in opposite directions with the growth of general business and population. It may not be out of place to consider each of these somewhat more in detail.

IMPROVEMENT OF RAILS.

The primary factor in the improvement of the American railroad service, without which none of the others would have been possible, was the substitution of steel for iron rails. From data in Poor's Manual it appears that in 1880 less than three-tenths of the railroad mileage of the United States was equipped with steel rails. This proportion increased to upward of eight-tenths in 1890, and is now probably considerably in excess of 90 per cent. In fact, no iron rails have been manufactured for many years except for repairs, no price quotations being available since 1882. The only iron rails in existence probably are those upon insignificant branch lines, where the traffic is particularly light or the financial conditions unduly depressing. Along with this supersession of iron rails by steel has gone an increase in their size and weight. Previous to 1890 50-pound rails were perhaps normal. At the present time their weight at points of particular density may run as high as 100 pounds. As illustrative of this change we may instance the testimony of President Fish, of the Illinois Central, before the Industrial Commission. He says: "Ten years ago we did not have a rail in a track that weighed 67 pounds to the yard. To-day the average rail over the whole system weighs over 67½ pounds. In other words, all the light lateral lines have been brought up, and the lowest standard on the main line is 75 and it runs up to 85. Indeed, we have some four miles of 100-pound rails." It is this increase in the use and size of steel rails which has induced the other improvements.

IMPROVEMENT IN EQUIPMENT.

The power and efficiency of locomotives has increased, perhaps, more in the last ten years, and particularly during the last five years, than in any previous period. Superior materials particularly have contributed to this result, such as the substitution of cast steel for cast iron and of nickel steel for wrought iron in axles, crank pins, etc. Some of the improvements which may be mentioned, according to data published in the Commercial and Financial Chronicle, are, for instance, an increase in the average heating service from 2,000 in 1890 to nearly 3,000 square feet at the present time, and an increase in the average steam pressure from 160 pounds to 210 pounds per square inch in the same period. The maximum weight has also increased by upward of 50 per cent during the decade. The average weight of a locomotive at the close of the civil war was approximately 90,000 pounds. This has increased in somewhat the following proportions: To 1881, 102,000 pounds; to 1893, 135,800 pounds; to 1895, 148,000 pounds; to 1898, 230,000 pounds; rising to a maximum, in 1900, of 250,000 pounds.[1] Compound locomotives are also supplanting those of simpler type for peculiarly heavy service. The first of these was built in 1899, only one being constructed in that year. In 1900 a single locomotive works turned out 500—a number constituting two-thirds of the entire output of that company—for use in the United States. Such locomotives undoubtedly cost more to build and also for repairs, owing to the multiplicity of parts, but the greater steam capacity and the considerable saving in fuel, amounting to perhaps 20 per cent, more than offset this objection. The traction efficiency of these improved locomotives may be shown by the statement that in 1885 the decapod Baldwin locomotives, made to haul 3,600 tons on a level, represented the maximum capacity. Five years later the same company constructed locomotives to haul 4,000 tons, not only on a level, but on any ordinary grade. As indicative of the very latest advances in locomotive construction, we may instance those built recently for the Illinois Central and the Union Railroad at Pittsburg, both low-grade roads, carrying exceedingly heavy train loads. The first of these weighed, including its tender, 365,000 pounds, the Union Railroad consolidation engines weighing 334,000 pounds. Such locomotives are stated to be twice as powerful as the best which were manufactured fifteen years ago. As summarizing the increased efficiency of American locomotives, we may instance the figures of the Interstate Commerce Commission, showing the average performance of locomotives for the United States. Whereas in 1894 the average number of tons of freight carried per locomotive was about 32,000 tons, this rose

[1] See testimony of J. H. Converse, Reports Industrial Commission, Vol. XIV, p. 231.

to 46,000 tons in 1899, the increase being principally during the last three years. At the same time the number of tons of freight hauled one mile for each freight locomotive in the United States increased from 4,000,000 in 1894 to approximately 6,000,000 in 1899. In other words, the average performance of each freight locomotive in the United States has increased by 50 per cent in the last five years.

The economy of large freight cars has been amply demonstrated. Marked advances in the average capacity have taken place in the last few years. In the sixties a 15,000-pound freight car represented about the normal capacity. This has increased, as measured by maximum load, to 28,000 pounds in 1873; to 40,000 pounds in 1875; to 60,000 pounds in 1885; to 70,000 pounds in 1895; while at the present time 80,000 to 100,000 pound cars are in everyday use. The Railway Review, for instance, has recently described a 50-ton hopper car, of which 400 are being built in one order. Cars of this latter type, built to carry 40 to 50 tons, are necessarily of pressed steel construction, and are mainly useful for the carriage of coal and ore and similar low-grade commodities.

It seems to be questionable whether a maximum capacity has not been about reached, in view of the exceedingly great wear and tear imposed upon track, bridges, etc. Up to this point the economy of heavy loading is indisputably proved. Increased size of cars far more than proportionately increases the paying load. Thus, for instance, an 18,000-pound car will carry 20,000 pounds load, while a 22,000-pound car will carry a load twice as great. It is stated on good authority, for example, that a car of 40 tons capacity can be constructed which will weigh but 3,000 pounds more than a 30-ton car, and cost hardly $50 more. This is undoubtedly the reason why at the present time the average load per car is at least 100 per cent greater than the maximum which was allowed twenty years ago. In this connection the data of the Interstate Commerce Commission may be again adduced in proof. This shows a steady increase in the freight performance of American equipment. Whereas in 1894 it required, on an average, 1,888 freight cars for every 1,000,000 tons of freight transported, this figure has now fallen to 1,350 for the fiscal year 1899. In other words, a very substantial increase in the freight service of each car has been attained.

INCREASE IN TRAIN LOADS.

The effect of the wonderful development of railroad facilities and operation is clearly shown by the progress in increasing the train load. This is universally accepted to-day as the unit of operation measuring the cost of service to the railroads. It is thus adopted because within limits the cost of handling a train does not vary greatly with its capacity. In other words, a train crew can handle 30 cars

about as well as 15 on long-haul business; and expenses for fuel, etc., do not increase proportionately to the load. The effect of this is that an increase in the paying train load very materially decreases the cost of operation per ton, thereby enabling the railroads profitably to transport freight at lower and lower rates.[1]

For the United States as a whole the average train load has increased from about 175 tons of paying freight in 1890 to 189 tons in 1895, to 198 tons in 1896, to 204 tons in 1897, to 226 tons in 1898, and to 243.5 tons in 1899. This is probably the highest record which can be cited for any railroad system in the world. Examination of this phenomenon in detail reveals the same remarkable result. Thus the New York Central Railroad has increased its average train load from 103 tons in 1870 to 322 tons in 1899. The Pennsylvania Railroad reports an average train load of 480 tons, and the Norfolk and Western for 1900 reports revenue freight train loads of 435 tons. It will be noted from the figures for the United States as a whole, that the increase has been peculiarly rapid during the last two years of prosperity. This is exemplified by the Lake Shore road, which has been able to increase its average train load from 352 tons in 1898 to 427 tons in 1899. The Chesapeake and Ohio has similarly increased its freight train load by 46 tons in 1899, attaining a maximum of 425 tons. Next below these roads follow the Great Northern, an economically operated road, with an average load of 356 tons, and the Erie, reporting 316 tons. The latest returns from the Erie show an average train load of 400 tons in 1900, as compared with 291 tons in 1896–97. The significance of these figures can be realized from the fact that the London and Northwestern, one of the leading railroads in Great Britain, reports recently an average freight train load of only 68 tons. This represents probably a fair average for European railroads as a whole, although in England the general practice of privately owned cars, of light locomotives, short freight sidings, etc., may reduce the figure slightly below the continental average.

It will be noted that the figures for American roads above given represent averages. These are compounded from local and through traffic taken together. It is apparent at once that local trains must average far lighter loads than are customary upon long hauls without breaking bulk. Thus New England railroads report an average train load of only 172 tons, while other parts of the country, such as the North Central group, report 312 tons of paying load. Only by separation of local from through business can we adequately appreciate the enormous advances which have taken place in railroad operation in the United States, with corresponding reductions in the cost of transportation. While the New York Central reports an average train

[1] See diagram at p. 268, showing the movement of freight revenue and operating expenses.

load of 322 tons, the average load of their through trains on the main line rises as high as 750 tons. More than twice this figure is attained upon the Pittsburg, Bessemer and Lake Erie road in hauling ore from the lakes to the furnaces at Pittsburg. The Illinois Central, for its low grade and long haul to the Gulf, has recently constructed locomotives capable of hauling 2,000 tons of net paying load. Even this figure has recently been surpassed by the New York Central, which, with its monster new "mogul" engines, is planning to haul 80 loaded 30-ton cars, giving 2,400 tons of revenue freight. From these figures it certainly appears that train loads for long haul may soon be standardized at not less than 2,000 tons, a figure which would have seemed absolutely impossible to railroad managers of even ten or fifteen years ago. The maximum train load in Germany on coal traffic, which, of course, greatly exceeds any general average for trains of all classes, is about 500 tons. It has been regarded as a notable achievement that this represents an increase of about 100 tons in the last decade.

The significance of these changes is still further shown by the following table, which represents the relative changes in revenue per ton-mile and in the density of traffic by ton-miles per mile of road, as well as in the size of the train load:

Freight revenue per ton-mile, etc., 1867–1897.

[From Charles H. Hull, International Review, 1901.]

Year.	Revenue per ton-mile from freight.	Change.	Ton-miles per mile of road.	Change.	Tons carried per mile run by freight trains.	Change.
	Cents.	*Per cent.*		*Per cent.*		*Per cent.*
1867	1.925	100	279,712	100	867	100
1877	1.286	67	345,773	123	983	113
1887	.984	51	573,513	183	1,312	151
1897	.753	40	617,810	221	2,033	234

Quoting from this authority, it appears that "in the thirty years following the war the receipts from our railroads from the ton-mile of freight service have fallen 60 per cent. It also shows that the proportion of freight handled to miles of road has risen 121 per cent, and that the paying weight in our freight trains has increased 134 per cent. The dead weight has likewise increased, but not so much—a fact which the table does not show. In other words, more weight is hauled per mile of road and an increased proportion of the weight hauled is paying weight."

MINOR ECONOMIES.

A number of other minor economies in railroad operation remain to be instanced. Prominent among these is the increasing tendency toward equality in the volume of freight moving in opposite direc-

tions. The growth of population and of local trade is tending to build up the movement of west-bound tonnage, thereby counter-balancing to some degree the east-bound tonnage. This is peculiarly the fact upon the trunk lines of the country. Thus the Lake Shore and Michigan Southern Railroad, which in 1870 reported 72 per cent of its freight moving east, in 1895 finds this proportion reduced to 56 per cent. In other words, the freight is almost evenly divided as moving east or west. A similar condition is reported by the Illinois Central, where almost entire equality in tonnage north and south seems to be the rule. This ideal is probably not attained as yet upon many of the roads, the New York Central for 1899, for instance, still reporting about twice as much total tonnage moving east as west, and upon through business more than six times as much traffic to the seaboard as in the contrary direction. The opposite condition prevails so far as mere volume is concerned upon the transcontinental roads, which report nearly twice as many tons moving to the Pacific Coast for 1899 as to the east. It is probable, however, that the growth of the fruit business and of other traffic may tend to balance this inequality. The economy incidental to such equality is, of course, apparent, inasmuch as it prevents the wasted cost of returning empty cars to the point of shipment. The Bessemer road, or a lumber road with all its traffic in one direction, must of necessity cost a great deal more per ton mile to operate than would otherwise be the case. At the same time the possible inconclusiveness of these statistics must be considered. While the total tonnage moving east or west upon a railroad may tend to equality, it may happen that the predominant movement in either direction occurs at particular seasons of the year, thereby preventing the economy in back loading to which reference has been made.

Another minor economy in railroad operation, which, however, is rather local in its character, consists in the application of petroleum for use as motive power. This is of great importance, with the recent oil discoveries in Texas and California, to the Southern transcontinental lines, such as the Southern Pacific and the Atchison, Topeka and Santa Fe. More than six-tenths of the cost of locomotive service is charged for fuel, and the reduction of this cost from, approximately, $4 a ton, to an oil equivalent of $1 a ton may be appreciated. It is estimated by the Commercial and Financial Chronicle that this will involve for the Southern Pacific road alone an economy of $3 per ton on an annual consumption of 1,600,000 tons of coal. This saving would pay 5 per cent on a capital of $100,000,000. Whether it will incidentally mean lower freight rates remains to be seen.

EFFECT OF THESE ECONOMIES.

The phenomenal increase in revenue per train above described has proportionately increased the return per mile run by freight trains. Whereas the revenue per mile run by freight trains was $1.65 in 1890, decreasing during the period of depression to $1.55 in 1894, it has risen progressively to $1.79 in 1899. Applying this increased figure to the total of upward of 507,000,000 miles run by freight trains in 1899, some conception of its financial results may be gained.

Another criterion of the economy of railroad operation is the ratio of operating expenses to earnings from operation. This varies very widely upon American railroads, according to the local conditions. The range upon individual roads appears to be from a maximum of 77 per cent upon the Baltimore and Ohio and the Wabash railroads, and something over 70 per cent upon the Erie Railroad, to as low as 49 and 47 per cent respectively upon the Great Northern and Northern Pacific. But on the whole it appears that it costs about two-thirds as much to move a train one mile as the service is worth to the shippers, judged by the revenue. In other words, the exact proportion for the United States for 1899 was 65.24 per cent. This is the lowest reported since 1887. During the years of depression, with a dearth of business, which, of course, always operates to increase such expenses in undue proportion, the percentage rose as high as 68.14 in 1894, although in 1890 it was not very much higher than it is at the present time. As an index of the improvements effected, the case of the Chesapeake and Ohio Railway may be cited. Its ratio of operating expenses to revenue has decreased from 72.8 per cent in 1891 to 62.2 per cent in 1901.

As a result of the various economies in operation, and also of the increased density and volume of traffic, the gross earnings per mile of line operated have in 1900 risen to a maximum of $7,722. This is more than $1,000 in excess of the gross earnings per mile of line for 1890. During the period of depression they fell as low as $6,050, in 1895. The year 1900 for the first time shows gross earnings per mile of line exceeding those of the years 1892 and 1893, which were periods of comparative prosperity. In spite, however, of the fact that from 1893 to 1899 gross earnings per mile of line decreased, the various economies which have been described enabled net income to be considerably in excess of that which was received in 1893 and before. In fact, the economies enforced by the period of depression subsequent to 1893 were most potent factors in producing the beneficent results of the last three years, as measured by net earnings, dividends, and surplus.

MAINTENANCE AND IMPROVEMENT OF RAILROAD PROPERTY.

A peculiarity of railroad operation is that many of the expenses for maintenance of way and equipment are capable of postponement during periods of depression. In other words, a railroad once thoroughly in condition will remain more or less effective throughout a considerable period without expenditure of as much money as would be necessary over a long period of years to keep it in prime condition. It is indisputable that a considerable part of the activity and prosperity of the last two years is due to the extraordinary expenditures upon maintenance of way and equipment which were necessarily postponed during the lean years subsequent to 1893. This may be shown particularly with reference to the number of employees. For the fiscal year ending June, 1900, an average of 529 employees per 100 miles of line is reported. This figure for the first time surpassed that reported for the prosperous year 1893. In 1890 the average was 479 employees, which was decreased in 1895 to 441. This decrease took place almost entirely in the employment of those concerned in the maintenance of way, such as trackmen. For instance, 153 men per 100 miles of line were occupied in such work in 1892, but this number was reduced by reason of enforced economies to 123 in 1894. It was held down to this figure for several years, and has only increased with the return of prosperity and a corresponding attempt to bring the track and way to a condition of maximum efficiency. It appears also that this economy in railroad operation was unequally distributed. About seven-tenths of all the railroad employees discharged during 1894 had been employed in the Southern States, where the depression was peculiarly keen.

It is possible to estimate roughly the amount which a well-conducted railroad should normally expend in order to maintain its track and equipment in good condition. Thus it is estimated that not less than $700 per mile of line is necessary as an annual expenditure in order to keep the roads in the West and Southwest in good condition. Upon the "granger" roads probably something in excess of $800 is necessary, and a figure very considerably greater is, of course, required upon the double or four track lines in the northeastern parts of the country. To show the distribution of retrenchment, it appears that, whereas in 1894 expenditures for maintenance of way and equipment constituted but 35.07 per cent of the total operating expenses, in 1900 40.81 per cent of such expenses were assigned to this service; in other words, almost 6 per cent more of the $961,000,000 expended for operation was put into maintenance. No such change is noticeable in the proportion assigned to conducting transportation, that is to say, for actual movement of trains. Thus, while maintenance of equipment expenditures

for 1900 exceeded those of 1899 by 20 per cent, the increase in operating expenses due to conducting transportation was only 8 per cent. And yet the latter class of expenditures usually form 54 to 57 per cent of operating expenses, while the former constitute but 16 to 19 per cent. Nevertheless, a somewhat greater saving in this class of expenditures has prevailed, as enforced by the depression of those lean years.

The degree to which American railroads are at the present time renovating their equipment is shown very clearly by the construction of new rolling stock. There was an actual decrease in the number of freight cars to 100 miles of line during the years from 1894 to 1898. Estimating that the country actually needs approximately 100,000 new freight cars each year to take the place of those worn out or discarded, it appears that during the lean years from 1892 to 1897 a shortage of from 250,000 to 300,000 freight cars was the accumulated result. The year 1898 and subsequent years have as a consequence been characterized by the construction of equipment at an almost unprecedented rate. In 1898 and 1899, 290,000 freight cars were built, a number 33,000 in excess of those built in the entire preceding 5 years, but leaving still further a shortage of 143,000 cars. Quoting still further from data furnished by the Pullman Car Company, "Extremes beget extremes. During the years of depression few cars are ordered and when the reaction does come and the railroad business revives, the freight cars are not in existence to handle it, and railroad officials become almost frantic." A peculiar feature has been the development of the steel freight cars, which have increased in far more rapid proportion than any other type. This is shown by the data also furnished by the Pullman Company. From this it appears that up to January 20, 1901, steel freight cars have been built at the rate of 40,000 a year. The country is now building equipment at the rate of 500 freight cars, 5 passenger cars, and 10 locomotives a day.

In addition to these vast expenditures, which are in the nature of postponed operating expenses, vast amounts are being put into permanent improvement of terminals and right of way. Thus, for instance, the Pennsylvania Company during the calendar year 1900 expended upward of $10,000,000 from current income for improvements. The Illinois Central in its annual report to July, 1901, is able to contrast $1,382 per mile spent for maintenance, rising to $1,630 in 1895, with more than $2,400 per mile expended both in 1900 and 1901. In addition to these nearly doubled maintenance expenses, upwards of $8,000,000 from revenue have been added for betterments within four years. The Chesapeake and Ohio Railway, which spent $2,602,000 for maintenance in 1895, likewise increased its outlays for this purpose to $4,471,000 in the last fiscal year. It is a matter of common report also that the New York Central, which economized

during the lean years, is being rebuilt almost from end to end. The traditional policy of the Lake Shore road since 1883 of charging all construction or equipment to operating expenses—that is to say, of meeting them out of current earnings—has been gradually extended until it has attained widespread acceptance. The contrast with English policy is clearly shown by comparison with that of the Canadian Pacific road. On that system the practice is current of charging such expenses to capital account—that is to say, paying them by means of issuing new stock or bonds. The significance of this as affecting capitalization will properly be considered in connection with finance.

HOW FAR ARE THE CAUSES OF PRESENT RAILROAD PROSPERITY PERMANENT?

SUMMARY OF CAUSES OF PROSPERITY.

Summarizing the present causes of railroad prosperity, they seem to be sixfold. In the first place, they are due to the revival of general business rather than to any particular abundance of crops. Secondly, they are due to actually higher freight rates than have prevailed for many years. In the third place, these rates are not only higher, but by reason of harmonious action of the various roads they are being actually maintained. In other words, rate-cutting is less prevalent than for many years. Fourthly, the railroads are being more economically administered than at any time in their history, such economies having been in large measure induced as a necessity during the lean years of 1893 to 1897. Fifthly, extraordinary expenditures for railroad improvement, and particularly for renovation of the right of way, are the rule. In other words, a vast amount of money is being expended for supplies which are properly postponed operating expenses from previous years. Lastly, despite the increased volume of business and the growth of population, no proportionate amount of new construction has taken place. In other words, as above mentioned, the last decade has witnessed a notable decline in activity of such new construction. The result of this is that at the present time, more than at any previous period in our history, the country has grown to the measure of its transportation facilities.

PERMANENCE OF THESE FACTORS.

In order to determine how far the present prosperity of railroads is permanent, we may properly apply this question to each of the several causes above cited. As to the volume of business, while the country has grown in general it can scarcely be expected that continued activity in general trade on the present scale can be maintained. It

does appear, however, that the change in the character of the tonnage—that is to say, a lessening reliance of the railroads upon mere crop transportation—is a condition which has come to stay. It is a natural result of the growth of towns and cities along the lines of railroad. As for the second factor, the peculiarly high rates put in force in 1900, more doubt may be expressed as to their permanency. Railroad returns, such as are current at the present time, are likely to invite increased supervision and regulation of rates both by courts and State or Federal commissions. More effective than these, however, in reducing rates must inevitably be the increasing competition of railroad systems, and of rival markets one with another. Every improvement in transoceanic transportation must sharpen competition of remote producers for the world's market. The railroads of the country must perform their part and in their own interest in order to enable the American producer to secure his share. The necessary result of this will be declining rates, such as have been observed progressively in the last thirty years. The only other alternative is that the railroads should unite by harmonious action to prevent this result, but the danger to their constituents and also to themselves through hostile legislative sentiment may be relied upon to postpone such union. It is to be hoped that the maintenance of rates at published tariffs—that is to say, the abolition of personal discrimination as between various shippers—is an improvement in the railroad situation which has come to stay. The advantage of a phenomenal volume of business has temporarily aided in this respect. The true status of affairs is well stated by President Ingalls, of the Big Four road, before the Industrial Commission, as follows: "My judgment is when this rush of business is over the railroads will gradually drift back to their old ways, and we must have some legislation to help us." It is too early, as will appear from subsequent discussion of the community-of-interest principle, to form a judgment respecting its peculiar efficacy as a safeguard against rate cutting; but it is to be hoped that increased publicity and wise legislation, combined with a far-sighted policy on the part of the railroads themselves, will never permit a return to the wholesale abuses of previous years in this respect. Of the bright future for American railroads as a result of their remarkable economies in operation it is unnecessary to speak further. That they are better and more economically administered than ever before has been amply demonstrated. That prosperity will engender once more a wastefulness and extravagance of unscientific railway operation is hardly to be feared. This is an improvement which is apparently permanent. Respecting the stimulus to present prosperity due to vast improvements, and especially to expenditure on account of past retrenchment in lean years, it may be said that this is an element which must always

peculiarly exaggerate the depression of lean years and enhance the beneficence of periods of prosperity. The advantage, however, where possible, of maintaining railroads by normal expenditures in years when prices are normal, rather than of postponing them by shortsighted or enforced financing to years when prices are inflated, is too patent to merit discussion. If the experience of the past has been wisely interpreted, railroad operation in the future should more and more evenly distribute expenditure year by year, rather than concentrate it, as has too often been the case in the past. Such action on the part of the roads should prove a helpful factor in the future.

EFFECT OF FUTURE RAILROAD CONSTRUCTION.

The final reason above mentioned for the present prosperity of American railroads, and the one which perhaps more than any other makes the future bright, is the limitation of new construction. The evils of the past when no price was too great to pay for a new railroad, however unnecessary from the point of view of actual service, are becoming more and more appreciated. Since, however, prosperity always invites speculation and promotion of new corporations, it may not be out of place to dwell a little more in detail upon this point. The causes which at the present time tend to restrict the construction of new competing roads are several. In the first place, the experience of the past makes financiers more cautious. Bankers and underwriting syndicates may be expected to exercise greater caution in the promotion of new roads. Another consideration operating in the same way is the increasing cost and difficulty of securing terminal facilities in any of the more densely populated parts of the country. The enormous cost of the right of way, and particularly of securing entrance into the heart of larger cities, operates effectively to discourage enterprises of this sort. The community of interest principle must also be reckoned with to prevent adjacent and formerly rival systems from extending feeders or branch lines into each other's territory in order to secure business. Another cause peculiar to the nature of railroad operation itself should be mentioned. Railroad rates have at the present time declined by reason of railroad competition to a figure where an enormous volume of traffic is necessary in order to secure adequate return upon the capital invested. In no other way than by transporting a huge volume of traffic with its incident economies can railways live under present conditions. Such a volume of traffic is not in existence at the present time in excess of existing facilities, and consequently the incentive to the construction of new lines is in large measure absent.

The causes limiting new railroad construction above mentioned are mainly private in their character. The cooperation of the public to

the same end may, however, be secured by enactment of wise legislation. Such is coming to be the case in many of the most progressive commonwealths. The policy of requiring certification of a railroad commission that public convenience and necessity warrant the construction of a new road has long been exemplified in Massachusetts. New York, since 1892, has followed in the same path, as have several of the other eastern States. Illinois, a typical middle State, has adopted the same policy. Thus, in the recommendations of the Illinois railroad commissioners in 1895, special stress is laid upon the desirability of restraining promotion by irresponsible persons. It is accepted by that commission as a leading principle as laid down in a recent case under the New York law, that the privilege of constructing a railroad is but a franchise granted by the State. Under such circumstances it is a privilege to be exercised only when its exigency and desirability has been established beyond all measure of doubt.

The proposition has been advanced frequently before the Industrial Commission that supervision in the construction of interstate lines should be exercised not only by the States but by Federal authority. The difficulties incident to such policy are, however, apparent—this was clearly evidenced before the Cullom Committee in 1896—inasmuch as it would always be possible to construct a line in sections, each section being in first instance wholly within the jurisdiction of a single State. By this means the control exercised by a Federal Commission would be rendered exceedingly difficult. The conditions are markedly different from those which prevail in England, where, for instance, an act of Parliament is necessary for incorporation, and where the expense is so considerable as to preclude irresponsible promotion. It should be stated that whatever the action taken, it should not only be in the public interest, but also as a matter of justice to the railroads already constructed. Railroad regulation and supervision have come to stay; there can be no question about that fact. A corollary, however, of control and supervision should be protection, and the only adequate protection offered to existing railroads will be restraint upon the construction of rival lines intended to serve not the public but solely the ends of those who promote and finance them.

II. CONSOLIDATION OF RAILROADS.

THE GROWTH OF RAILROAD SYSTEMS TO 1898.

FIRST PERIOD—TO 1870.

The development of American railroad systems down to 1898, as judged by magnitude alone, may be roughly divided into three periods. In the first—that is, down to 1870—a few hundred miles in length constituted the maximum for efficient operation. The Illinois Central, with 700 miles of line, was long considered one of the greatest railroads in the world. Until after the civil war there was only one road with a length aggregating more than 1,000 miles. This growth began early in the fifties, at which time the Pennsylvania system first surpassed 500 miles in length, and in 1853 to 1858, when the New York Central nucleus was formed by the consolidation of some sixteen independent corporations. In the territory west of Chicago the Chicago and Northwestern road operated but 119 miles in 1859, a figure which rose to upward of 500 in 1866. The inconvenience, both for freight and passenger traffic, incident to these small systems is of course obvious. It is stated that, for instance, a journey from New York to the Mississippi in the fifties involved not less than seven bodily transfers from one car to another

SECOND PERIOD—1870–1890.

The second period in the growth of consolidation extended to about 1890, at which time 5,000 miles represented about the maximum length of a single railroad in the United States. The Pennsylvania road had grown to about 4,000 miles in length by 1880. The absorption of the Nickel Plate road by the Lake Shore and Michigan Southern in 1882, followed by absorption of the West Shore road by the New York Central in 1885, very considerably increased the length of systems under common control. In the West the Chicago and Northwestern road had grown by 1886 to about 3,500 miles, to which was added some 1,500 miles by the control of the Chicago, St. Paul, Minneapolis and Omaha, and the Fremont and Elkhorn roads. By 1889 the Union Pacific road owned 2,000 miles of line, but controlled nearly 4,000 more. It is difficult to determine whether the enactment of the act to regulate commerce produced any effect upon this growth of large systems. Upon the one hand it appears, from investigation by the Interstate Commerce Commission itself, that consolidation was rather lessened after 1887 as compared with preceding years. Thus, from their data it appears that an average of twenty-seven companies per year were consolidated in 1886, 1887, and 1888, as compared with eighty-six compa-

nies annually consolidated in 1880, 1881, and 1882. On the other hand, judged by mileage, 1880 witnessed a consolidation of about 4,000 miles, followed in 1889 by 6,600 miles, and in 1890 by about 3,000 miles of line. It does not appear from this evidence that any specific influence was immediately traceable. Judgment should be based upon a considerable term of years, in order to eliminate the direct effect of prosperity or depression in any case.

THIRD PERIOD—1890–1898.

The decade after 1890 for the first time witnessed the growth of systems aggregating as high as 10,000 miles under single control. The Pennsylvania road rapidly increased its mileage to upward of 7,000, for example. The interchange of business at Chicago between trunk lines and the Western system had already begun to foreshadow alliances covering both territories. Typical of these were the close working agreements between the Vanderbilt system and the Chicago and Northwestern and the Union Pacific in the Far West. The growth in size of the roads, for purposes of operation at least, although not all of them were necessarily consolidated, is shown by the following statement: In 1867, one road alone exceeded 1,000 miles, constituting about 7 per cent of the total mileage of the country. Ten years later, in 1877, 11 roads exceeded this figure, constituting 20 per cent of the mileage. In 1887, 28 companies, with 44 per cent of the mileage of the United States, were over 1,000 miles in length; and in 1896, 44 companies, or 56.9 per cent of the mileage, exceeded this size. In 1900 over 60 per cent of the mileage of the United States was included in systems larger than 1,000 miles. This statement illustrates the rapid development which took place after 1890. A comparison of 1880 with 1900 shows that in the former year there were 2,085 railroad companies in existence, either operated independently or under lease, aggregating 93,000 miles in length. In June, 1900, the mileage had more than doubled, with a total number of 2,023 corporations; but of these only 847 were independently operated, the rest being either leased or subsidiary.

It is significant as bearing upon the growth of railroad systems that the period of depression of 1893–1897 retarded for some years the progress of its development. More than this, several important systems were dismembered as a result of the reorganizations effected during that period. Thus, for instance, the Atchison road lost the St. Louis and San Francisco; and the Union Pacific system lost the Oregon Short Line. In fact, the latter road was entirely dismembered. The Erie Railroad alone, among the important ones which were subject to reorganization, was able to resist the disrupting tendency of financial readjustments. The low-water mark in consolidation

occurred in 1898, when only 174 miles were actually consolidated, though others were merged or leased. The entire reorganization of such roads as the Richmond and West Point Terminal opened the way to the formation of newer and more important systems, such as the Southern Railway, in the subsequent years. This latter has, for example, at the present time absorbed almost forty minor corporations in a system aggregating between 6,000 and 7,000 miles.

THE CONSOLIDATIONS OF 1898 TO 1900.

GENERAL DESCRIPTION.

Since the return of prosperity in 1898, railroad consolidation upon a scale hitherto unequalled has been under way. The earlier systems, which during the nineties rose to a maximum of 10,000 miles of line, have now been superseded by the organization of systems under common control which include from 15,000 to 20,000 miles apiece. The extent of this movement may be judged from the statement of the Interstate Commerce Commission that "disregarding mere rumors and taking account of well authenticated statements, there were absorbed in various ways between July 1, 1899, and November 1, 1900, 25,311 miles of railroad. There are in the whole United States something less than 200,000 miles of road; more than one-eighth of this entire mileage was, within the above period, brought in one way and another under the control of other lines." Since the 1st of November, 1900, this rate of consolidation has been still further exceeded, while at the same time the character of the changes has become noticeably different. Forces are apparently at work which may within the immediate future bring the railroad system of the United States under the control of comparatively few dominating financial interests. It is highly important that the character of this change should be thoroughly understood, inasmuch as it involves not alone the consolidation of hitherto independent railroads, but the amalgamation of entire systems.

The recent period of consolidation was inaugurated early in 1898 and 1899, notably by changes upon the Eastern trunk lines. The New York Central not only took formal possession of the Michigan Central road, but also absorbed bodily the Lake Shore and Michigan Southern, which in turn controlled the New York, Chicago and St. Louis, and other subsidiary properties. These accessions have been since followed by the acquisition of the New York, Lake Erie and Western, and by further increase in investment holdings in the Big Four road. The tendency toward expansion has been even more marked in the case of the Pennsylvania Railroad, which, owning in fee but a little over 500 miles of line, now leases and operates four or five times as much directly; while at the same time, through the Pennsylvania Company

operating west of Pittsburg and Erie, it adds about 4,300 more miles of line. The following changes effected in 1900 illustrate the scope of its recent enlargement. Substantial investments having been made in the rival soft-coal roads, such as the Baltimore and Ohio, the Chesapeake and Ohio, and the Norfolk and Western, these holdings have since January, 1900, been extended until at the present time they amount to virtual control. In March of the same year the Erie and Western Transportation Company was acquired, giving greatly enlarged facilities upon the Great Lakes. This was followed in June by the acquisition of the Western New York and Pennsylvania, which, by the control of a majority of the stock, gave an independent outlet to the Pennsylvania system at Buffalo. Two months later came the announcement of the control of the Allegheny Valley Railway, adding 820 miles of line to its holdings. In the spring of the same year a majority of stock of the Long Island Railroad was purchased, and far-reaching plans are under way for improvement of terminal facilities at New York.

The purchase of the Central Railroad of New Jersey by the Reading Railway, and of the Pennsylvania Coal Company by the Erie system, have profoundly affected the status of the anthracite coal roads. Changes even more stupendous have been effected in 1901 in the territory west of the Mississippi. Prominent among these may be mentioned the acquisition of the Southern Pacific system by the Union Pacific; and the joint purchase of the Chicago, Burlington and Quincy by the Great Northern and Northern Pacific railroads. The Southern Railway has increased its line by nearly 1,000 miles through the purchase of the Mobile and Ohio in the Southern States. In the Southwest there are indications of the formation of a great system under the domination of the Missouri Pacific Railway, which, through the consolidation of various roads in Colorado, seems to be reaching out toward an outlet on the Pacific coast.

STATISTICAL RESULT.

The magnitude of the amalgamations hereby indicated may be appreciated by a tabulated statement of the various groups under financial control, as indicated by the Common Carrier, a technical railroad journal. A similar table by the editor of the Railway World will be found in the Review of Reviews for August, 1901. This statement is, of course, approximate, but it indicates the degree to which unification has already proceeded. According to this statement more than half of the mileage of the United States is now under the control of six financial interests, four of which at least each approach a limit of mileage of 20,000 miles. It should be carefully noted that this table indicates ownership and not operation. Many of the separate railroads indicated are operated in a number of groups.

Community of interest among railroads in the United States.

Lines.	Miles.
I.—VANDERBILT GROUP.	
New York Central lines	10,016
Delaware, Lackawanna and Western	951
Chicago and Northwestern	8,550
	19,517
II.—MORGAN GROUP.	
Southern Railway	6,807
Mobile and Ohio	879
Queen and Crescent	1,115
Central of Georgia	1,835
Georgia Southern and Florida	285
Macon and Birmingham	97
Philadelphia and Reading	1,891
Lehigh Valley	1,404
Erie	2,271
Central of New Jersey	677
Atlantic Coast Line	1,812
	19,073
III.—HARRIMAN GROUP.	
Illinois Central	5,000
Union Pacific	3,029
Oregon Railroad and Navigation Co.	1,137
Oregon Short Line	1,498
Chicago and Alton	918
Southern Pacific	7,723
Kansas City Southern	833
Chicago Terminal Transfer	107
	20,245
IV.—PENNSYLVANIA GROUP.	
Pennsylvania system	10,031
Buffalo, Rochester and Pittsburg	650
Western New York and Pennsylvania	633
Chesapeake and Ohio	1,476
Norfolk and Western	1,671
Baltimore and Ohio system	3,156
Long Island	603
	18,220

Lines.	Miles.
V.—GOULD GROUP.	
Missouri Pacific	5,326
Texas and Pacific	1,599
St. Louis and Southwestern	1,265
International and Great Northern	825
Denver and Rio Grande	1,675
Missouri, Kansas and Texas	2,423
Rio Grande Western	603
Wabash	2,358
	16,074
VI.—HILL GROUP.	
Great Northern	5,185
Northern Pacific	5,188
	10,373
VII.—BELMONT GROUP.	
Louisville and Nashville	3,285
Nashville, Chattanooga and St. Louis	1,195
	4,480
VIII.—BELMONT-MORGAN.	
Georgia Railroad	307
Atlanta and West Point	87
Western of Alabama	128
	532
IX.—INDEPENDENT SYSTEMS.	
Seaboard Air Line	2,591
Plant System	2,170
Chicago, Milwaukee and St. Paul	6,592
Rock Island	3,819
Chicago, Burlington and Quincy	8,070
Atchison, Topeka and Santa Fe	7,808
St. Louis and San Francisco (K. C. M. & B.)	3,000
Chicago & Great Western	1,023
Colorado Southern	1,142
Pere Marquette	1,762
	37,977

SUMMARY.

Groups.	Mileage.	Groups.	Mileage.
Vanderbilt	19,517	Belmont	4,480
Morgan	19,073	Belmont-Morgan	532
Harriman	20,245		
Pennsylvania	18,220		108,464
Gould	16,074	Independent	37,977
Hill	10,373		

CHARACTERISTICS AND OBJECTS OF RECENT CONSOLIDATIONS.

The consolidations of the last two years not only contrast strongly in magnitude with those of earlier years; they are at the same time essentially different in character. The purpose of the earlier combinations was in the main to secure business by extension of lines and feeders to strategic points. As has been properly said by Professor

Hull: "They were primarily administered not geographically; each aimed to handle its own traffic and to secure a strong position. A strong position was useful in adjusting a pool with rivals whose geographical location was like their own, and if pooling were improper or illegal, a strong position might prove not less useful in fighting." These earlier extensions also conduced markedly to economy of operation. Thus in place of the old fast freight lines which operated over a number of independent roads, a single railroad company could run its own cars without break directly from Chicago to the seaboard on its own rails. The object of these later consolidations is essentially different. The country has been well equipped with a network of branch lines and feeders. Most of the strategic points have been reached by a number of roads in common. There is no longer any object in economy of operation to be sought; in fact, the railroads since 1890 have been obliged to divide their lines into independent groups for operation separately, in order to obtain a maximum of economy. The new consolidations are intended expressly to obviate competition; once rival systems are brought under control in order to insure harmonious action. The railroads of the country are no longer divided into trunk lines and western systems, but the railroads east and west of Chicago and even west of the Missouri River are tending to become firmly knitted together.

A peculiarity of these recent changes deserves special mention. In order to attain a single important end it often becomes necessary to acquire an entire system of railroads, although only a small portion of that system can add directly to the efficiency of the controlling road. Thus, the entire Burlington system is absorbed by the northern transcontinental lines for no other reason than that they may obtain a direct entrance into Chicago. The Union Pacific Railroad purchased control of the Southern Pacific system, not because it needed that added mileage, but rather that it might indirectly acquire the Central Pacific and a direct outlet to the Pacific coast. The Long Island Railroad is purchased by the Pennsylvania Company, not for its local business along the main line, but simply in order that valuable terminals in Brooklyn may be developed. Even the profitable local business of the Central Railroad of New Jersey sinks into insignificance as a valuable possession of the Reading Railway when compared with its subsidiary coal business and the value of its terminals in Jersey City. This peculiarity of recent consolidations is undoubtedly due to the fact that the country is already sufficiently equipped with railroad lines for the transaction of ordinary business. New and independent inlets to strategic points would be therefore of doubtful value as self-supporting feeders. And more important still, terminal facilities have now become so valuable that no newly organized road or branch line can hope to secure an entrance without enormous cost. It may be cheaper, in other words,

to buy a whole system for the sake of its terminals or for the sake of a part of its main line, than to develop new terminals or to parallel already existing railroads.

Undoubtedly the most important of the objects sought in these recent wholesale consolidations has been the elimination of competition; that is to say, to secure the maintenance of established rates by removal of the incentive to rate cutting which competition in the past has induced. In order to secure this end it has become practically necessary to dominate by one financial interest an entire geographical section of the country. This new policy of division of the field by means of community of interest deserves careful consideration by itself.

METHODS OF CONSOLIDATION.

It is important to consider some of the methods by which these consolidations have taken place. These may be denoted as, first, actual purchase or ownership in fee; secondly, acquisition by lease; thirdly, stockholding control; and, fourthly, minority representation in directorates.

ACTUAL PURCHASE.

As illustrative of the method of consolidation and extension by actual purchase, we may instance particularly the cases of the Chicago, Burlington and Quincy sale to the Northern Pacific and Great Northern railroads jointly; of the Lake Shore to the New York Central; of the Central Railroad of New Jersey to the Reading; and of the Mobile and Ohio to the Southern Railway. In the first three of these we have the purchase effected by an exchange of bonds of the purchasing company for the stock of the road acquired. Thus, for instance, stockholders of the Burlington road receive for their holdings twice the value at par in 4 per cent bonds, guaranteed jointly by the Northern Pacific and the Great Northern railroads. The same proportion, namely, twice the par value, was given in the case of the Lake Shore road, the New York Central issuing in place of the old stock, 3½ per cent bonds. The terms of purchase of the Central Railroad of New Jersey did not differ in principle from this. In the case of the purchase of the Mobile and Ohio by the Southern Railway, the policy was slightly different, inasmuch as new bonds were exchanged for the old, while the stock of the Southern Railway was issued under a guaranteed dividend for the stock of the road absorbed. The peculiarity of this method of consolidation is that it often involves a great expansion in the capitalization of the parent company; in at least two cases above mentioned there having been an issue of bonds equal to twice the volume of the stock retired. This at the same time involves a permanent and fixed charge upon the earnings of the parent company

to the same degree. It crystallizes once and for all, apparently, any overcapitalization of the absorbed corporations, thereby tending to prevent any future reduction in the burden imposed upon the shipping public. On the other hand, such consolidation, with actual amalgamation, unites the several properties in a definite and harmonious interest. There is less likelihood that one property can be "milked" for the benefit of another.

Not only in the case of these recent consolidations, but in the railroad policy of the country as a whole, there may be detected a tendency toward the actual consolidation of railroad properties through ownership in fee. This has always been the policy of certain railroads, notably the Chicago, Milwaukee and St. Paul, which has been a compact property from the first, having built its own lines and held them in fee for itself. The Atchison Railroad has recently voted to purchase in fee a number of subsidiary properties formerly held under a more elastic tenure. The same policy has been adopted upon the Erie road, which since its last reorganization has been simplifying the terms under which it controlled its constituent parts. And the Burlington road in 1900, prior to its surrender of independence, voted to purchase in fee all of its leased lines.

CONSOLIDATION BY LEASE.

One fundamental objection to consolidation by purchase is to be found in the hostility of State legislatures. This has in many States taken the form of actual prohibition of consolidation in this way. In some instances, notably in the case of the Great Northern in Minnesota, it has made it necessary to develop the system by means of lease entirely rather than by actual purchase.[1] The opposition by the Mississippi Railroad Commission to the purchase of the Mobile and Ohio is another instance in point, as well as a decision of the Supreme Court of Illinois which held that in the absence of special authority no Illinois corporation could be consolidated with other roads. Particularly in Massachusetts, where public policy is clearly defined, such consolidation is viewed with disfavor. For this reason most of the consolidations in New England, and particularly the recent absorption of the Boston and Albany Railroad by the New York Central, and of the Fitchburg Railroad by the Boston and Maine Railroad, have been by means of lease. Such acquisition by lease has one marked advantage. The transaction involves no issue of new securities and consequently no opportunity for an undue increase of capitalization. The rental is fixed as a dividend, which is a matter of public record. Such leases, moreover, do not involve the sacrifice of the identity of the subsidiary company. Of course, where they are made for long periods, as in the case of the West Shore lease to the New York Central for 475 years, or of the Chesapeake and Ohio by the Pennsylvania for 999

[1] The suits instituted against the Northern Securities Company in January, 1902, are recent examples.

years, such a lease practically amounts to entire consolidation. But where public supervision is enforced, as in the recent lease of the Boston and Albany Railroad in Massachusetts, the term is expressly limited in this case to 98 years. Such a policy opens the way, consequently, to a readjustment of financial and traffic burdens under the changed conditions which may prevail at the expiration of that term. It avoids the possible injustice to future generations incident to a consolidation upon unequal terms. As illustrative of the progress of absorption by lease, it appears that, in 1880, 53 leading railroads owned and operated directly 46,000 miles of line, at the same time leasing 13,000 miles, or about 22 per cent of the total. In January, 1899, these same companies owned 96,000 miles and leased 36,000, or about 27 per cent of their mileage. From this it appears that in general the tendency toward growth by lease has rather exceeded that toward actual consolidation by purchase, at least until very recently.

CONTROL BY HOLDING OF STOCK.

A third method of expansion, more elastic than either purchase or lease, is that of control by means of the purchase of capital stock. This policy has long been pursued to some degree by the railroads in the United States, but it seems to be increasing in favor of late. Among the recent consolidations effected by this means may be instanced the control of the various soft coal roads by the Pennsylvania Company, and the acquisition of the Southern Pacific system by the Union Pacific Railroad. Such ownership of the stock or bonds of one railroad by another may accomplish either one of two objects. It may be intended to secure corporate control, or it may serve merely for purposes of investment. In the latter case, such stock holdings constitute a convertible surplus, offering all the inducements for investment or speculation which such ownership implies. The extent of such holdings may be appreciated from the fact that on June 30, 1900, out of a total of stocks and bonds at par of $10,746,000,000 outstanding in 1900, railroad corporations owned upward of $1,943,000,000, or approximately 18 per cent. Of this amount railroad corporations owned $472,000,000 worth of bonds out of a total bond issue of $4,900,000,000; while their holdings of stock amounted to $1,470,000,000 out of a total share capital of $5,845,000,000. Obviously these proportions of stock and bonds respectively would vary considerably according to the end desired. Ownership of stock usually determines policy in the control of the road, while on the other hand the ownership of bonds is perhaps most desirable from the point of view of investment. The prosperity of 1892 was characterized by the ownership of one-quarter of all the railroad stock of the country by railroads themselves. The disrupting tendencies of the period of depression after 1893 tended to lessen this control by means of stockholding,

and at the same time rendered necessary the sacrifice of many bonds held for investment. In other words, the surplus invested in securities of this kind had to be drawn upon to maintain dividend payments. The return of prosperity in 1898 with an increase in the market quotations for bonds, accompanied by the desirability of increasing stockholding for purposes of control, led to a considerable change in the proportions of stock and bonds held in railroad hands. Since 1898 an appreciable tendency in favor of stockholding rather than investment in bonds has consequently been the rule. The fiscal year 1900 witnessed an enormous increase in such investments by railroads in their corporate capacity, the increase over 1899 being no less than $341,000,000. Its significance may be appreciated by comparison with the increases of previous years, since 1899 exceeded 1898 by only $80,500,000, and 1898 exceeded 1897 by $54,450,000. Of this unprecedented increase for 1900 only $78,000,000 was in the form of bonds, leaving $262,000,000 as representing the increase in stock holdings. Such has been one of the immediate results of the consolidations of 1900.

The distinction between actual purchase or absorption of one road by another and of mere control by stock holdings lies in the fact that in the latter case a bare majority of the stock, and in some cases even less, is necessary. It is a well-known fact that a relatively small but compact minority of stockholders can exercise a disproportionate influence upon corporate policy. For this reason the investment necessary by one road in the securities of another may be very considerably diminished, at the same time all purposes of control being effectually attained. Many of the older consolidations effected by stock ownership, especially in the Eastern part of the country, are characterized by the ownership of far more than a majority of the capital stock. Thus the New York Central owned 91.5 per cent of the stock of the Lake Shore and Michigan Southern road prior to its absorption. It at the same time owned 86 per cent of the stock of the Michigan Central. This is very different from control in a case like that exercised by the Boston and Maine road over the Maine Central, where a bare majority of the capital stock gives control. In the case of ownership of stock in the Baltimore and Ohio by the Pennsylvania road, $40,000,000 only out of a total of $105,000,000 suffices to give control. The Union Pacific Railroad absorbed the Southern Pacific Company through purchase of only about $85,000,000 worth of stock out of a total of $192,000,000. At the same time, such holdings are often capable of enlargement through allotment of convertible bonds. Such possibilities of exchange often operate to transform a minority into an actual controlling interest.

Many abuses are obviously possible where the control of one road by another consists in holdings of a bare majority, or even smaller proportion, of the stock. The laws of many States and recent court decisions

tend to protect the rights of minority stockholders, but the situation is still not entirely satisfactory. Popular hostility to such absorption is evidenced, for example, by the bill recently introduced and passed by the house of representatives of Pennsylvania, in March, 1901, requiring railroad companies owning two-thirds of the capital stock of a connecting line to purchase the latter outright. This would affect such transactions as the purchase of an interest in the Allegheny Valley Railroad by the Pennsylvania very considerably. The capital stock of the former road is $30,000,000. The Pennsylvania road owns something in excess of two-thirds of this amount. The enactment of such legislation as this would obviously require investment of a much larger amount of capital than was originally intended to secure control. Such legislation would apparently affect also the purchase of the Western New York and Pennsylvania Railway, which, as has been said, was intended to afford an opening to the lakes at Buffalo.

COMMUNITY OF INTEREST.

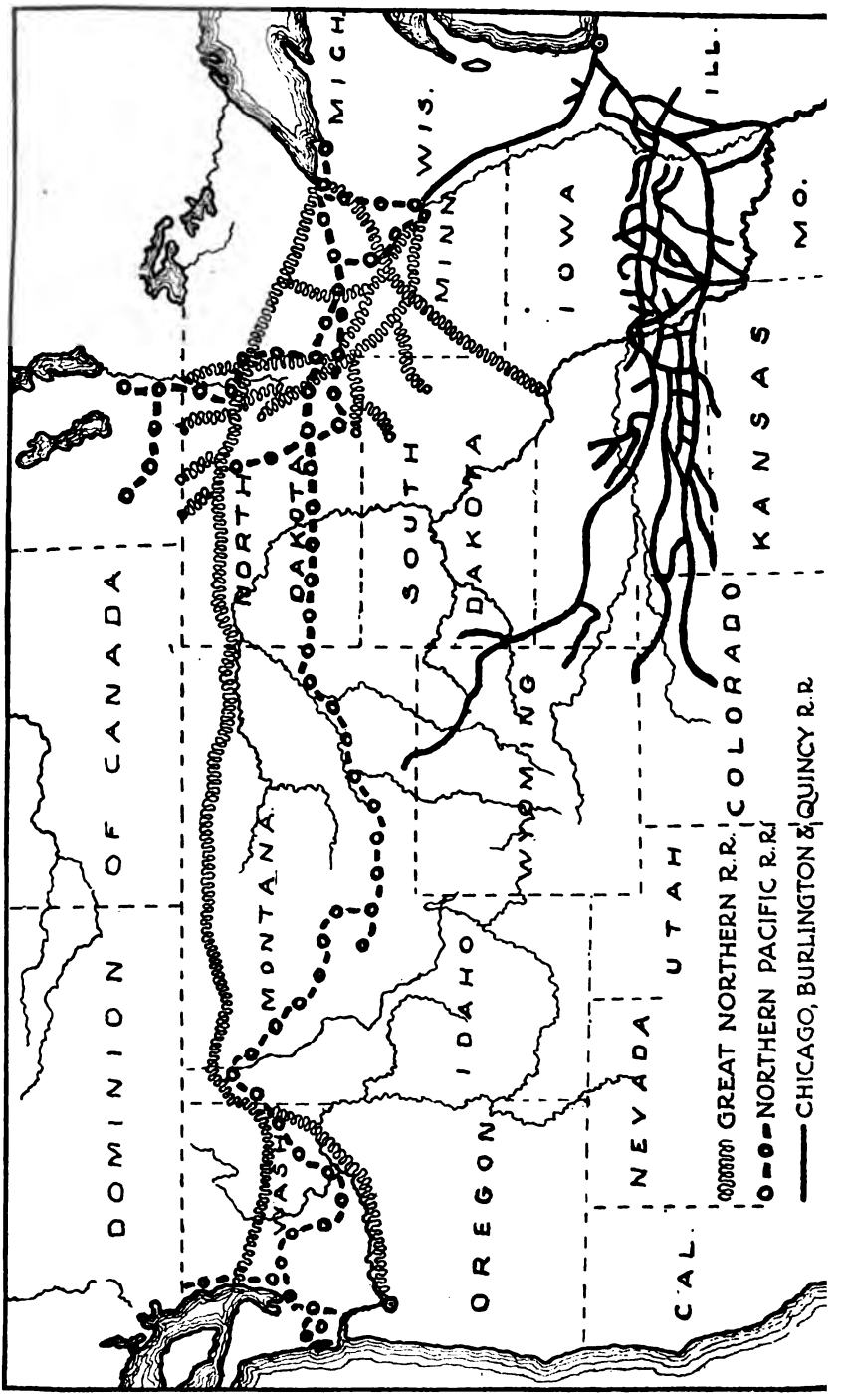
The consolidations of 1899–1900 have given rise to a new phase of railroad policy, novel alike both in this country and in Europe. This policy, denoted as either community of interest or community of ownership, is nothing more nor less than efficient representation by one railroad upon the directorate of another. This representation, intended to affect the policy of the junior company, may represent actual control or merely a minority interest, as the case may be. Its objects at the same time may vary all the way from the entire elimination of the disturbing element of a rate-cutting road, to the maintenance of harmonious railroad policy between a number of rivals. A good example of such community of interest for the elimination of rate cutting is found in the purchase of the Chicago, Peoria and Northern Railroad by the Chicago and Alton, the Illinois Central, and the Missouri, Kansas and Texas railroads jointly. A similar and more recent instance is the purchase of a controlling interest in the Chesapeake and Ohio road by parties in control of the New York Central and the Pennsylvania Railroad. The Chesapeake and Ohio had for many years been a notoriously disturbing element in trunk-line territory. Common agreement between the standard lines for the elimination of rate cutting resulted in this action. Another possible instance, although it has not yet been verified, would be the purchase jointly of control of the Lehigh Valley Railroad by all the lines whose anthracite coal interests are affected.

The clearest instance, however, of this new policy in railroad management is offered by the recent history of the Northen Pacific Railway. This is so intimately associated with the purchase of control of the Burlington road, already described, that it may justify further details respecting the entire episode. Consideration of the accompanying map shows that transcontinental business through the group of North-

western States is monopolized by two parallel roads, the Great Northern and the Northern Pacific, which have terminals at the same points, St. Paul on the east and the Pacific coast ports on the west. During recent financial difficulties of the older Northern Pacific Railway, Mr. James J. Hill, president of the Great Northern road, and others purchased a leading interest in its stock, in order that the two roads might work harmoniously for the attainment of a common end. The difficulty, however, which confronted these roads was that the other transcontinental routes, such as the Union Pacific, operating direct to San Francisco, and the Atchison and Southern Pacific roads, were all able to secure business to better advantage by reason of access directly into Chicago or New Orleans, respectively. It became of the utmost importance, therefore, in such competition that these northern roads should in some way gain control of a connection into Chicago. An offer was made to the Chicago, Milwaukee and St. Paul road for purchase. Negotiations to this end, however, came to naught, owing to the widespread ownership of St. Paul common stock, and to peculiarities in the relations of the holders of preferred to common stock. These factors, together with the determined opposition of important stockholders to the sacrifice of the independence of the road, forced the representatives of the northern transcontinental roads to turn their attention to another of the "granger" properties—the Chicago, Burlington and Quincy Railroad.

In the meantime it became apparent to other railroads engaged in transcontinental and "granger" business that such a consolidation might operate to jeopardize important interests. Thus the Chicago and Northwestern road, which had been receiving a large amount of freight at St. Paul from the transcontinental roads, would suffer by any consolidation which caused the diversion of its traffic from itself to the Burlington connection. The Union Pacific road, also closely affiliated with the Chicago and Northwestern, might suffer from such a consolidation, since business which it formerly had received from the Burlington might likewise be diverted to the north. In fact, such a consolidation threatened to upset entirely the balance of power in the territory west of Chicago.

Early in May, 1901, financial interests identified with the rival properties sought apparently either to prevent the consummation of this purchase, or at all events to mitigate any evil results which it might have to themselves, by extensive purchases of securities in the companies affected. In other words, to be specific, financial interests controlling the Union and Southern Pacific railroads began to purchase Northern Pacific Railway stock in the open market. Mr. Hill, representing the Great Northern road, on the other hand, desirous of confirming his control, continued to make extensive purchases. As a result of these purchases by the two parties, the price of Northern



Community of interest among transcontinental railroads.

Pacific stock rose enormously—at the rate of 23 points in one day, for instance—reaching finally a figure of 160, the price five months earlier having been only 58. The sales became so large in amount that it finally became apparent that the market had been oversold; in other words, that a great amount of stock at these temptingly high prices had been sold short. The result was a corner which surpassed in its magnitude any in our previous railroad history, such as the Harlem corner in 1863, and that in Chicago and Northwestern stock in 1892. The price of Northern Pacific common stock rose to $300 and then to $1,000 per share, remaining at this figure for only part of a day. The sacrifices necessary to secure funds for covering contracts precipitated a panic of widespread proportions. This began on the 9th of May. As indicative of the range of values sacrificed, Atchison common stock fell 35 points; St. Paul 31, and Union Pacific 37.

The important feature of the compromise between these rival interests for control was an agreement on the part of the Union Pacific and Southern Pacific railroads, to permit the consummation of the purchase of the Burlington road. At the same time it was agreed that the composition of the directorate of the Northern Pacific Railway should be left to Mr. J. P. Morgan, who should endeavor to secure adequate representation of all parties interested upon that board. This agreement, which represents the novel policy of community of interest, was officially announced on the 31st of May. The directorate of the Northern Pacific Railway, as promulgated on July 18, was composed as follows: James J. Hill, president of the Great Northern Railway; E. H. Harriman, chairman of the executive committee of the Union Pacific Railroad; William Rockefeller, director of the Chicago, Milwaukee and St. Paul Railway; H. McKay Twombly, director of the Chicago and Northwestern Railway Company, and Samuel Rea, vice-president of the Pennsylvania Railroad Company. Quoting from the letter of Mr. Morgan nominating this board, we have an express statement as to its purpose: "Every important interest will have its representative, who will be brought into close touch with the situation as a whole, and there should be no difficulty in reaching a conclusion that will be fair and just to all concerned, and tend to the establishment of permanent harmony among the different lines." It will be observed from this directorate that the individual members do not in all cases represent actual ownership in the Northern Pacific road. They represent rather interests whose prosperity is more or less directly dependent upon the traffic policy pursued by that road. In fact, of all the original parties interested in the Northern Pacific road, but one of the five gentlemen on the directorate remains, all the others standing respectively for either the other competing "granger" roads, the competing transcontinental line, the Vanderbilt,

or the Pennsylvania trunk line systems. It has since been stated that a third element in this agreement was that the Union Pacific Railroad should be accorded the right to negotiate for the Chicago, Milwaukee and St. Paul. Of this fact it is impossible to obtain confirmation. The movement of the stock in the market, however, seemed to countenance such a view. The advantage to the Union Pacific interests would be, obviously, that a road which has threatened for many years to build an independent outlet to the Pacific coast would be thereby prevented from pushing such a line to completion. This, in connection with the practical elimination of the Burlington Road as a rival transcontinental line, greatly simplifies the entire situation so far as the Pacific coast business is concerned. The importance of this Pacific coast business, in view of the recent territorial expansion of the United States in the Pacific and the Orient, is undoubtedly the factor which has concentrated the attention of financiers upon this far western railroad situation at the present time.

RAILROAD SECURITIES COMPANY.

One further possible development of railroad consolidation remains to be mentioned. This is the projected formation of a railroad securities company which shall be organized to purchase and hold stocks and bonds in all railroads west of the Mississippi, administering their affairs in such a way as to secure harmony. This would be in the nature of a financial pool. It was announced in February that such a company had been incorporated in New Jersey with a capital of $20,000,000, this to be largely increased as necessity determined. Such a scheme, however, is essentially different in its nature from the mere community of interest principle which has been described. The latter implies the direction of a railroad's policy by others than those who are largely identified in its ownership, whereas the formation of such a finance company implies that it is to assume the actual ownership of railroad securities, issuing therefor its own certificates. Whether the community of interest principle shall give way ultimately to such further development remains for the future to determine.

The prediction embodied in the preceding paragraph is realized at a late date—preventing the insertion of only the most general features concerning the incorporation of the Northern Securities Company. Announcement is made on November 13 that the consolidation of the Northwestern transcontinental lines has been effected by the incorporation of a finance company, under the laws of New Jersey, which will take over the stocks of both the Great Northern and the Northern Pacific railways. This new corporation is capitalized at $400,000,000, an amount which will scarcely cover the present requirements for purchase of the Northern Pacific common capital stock at 115, and of

the Great Northern stock at 180, as reported. The charter of the company apparently provides for a subsequent increase of the capital to cover whatever sums are necessary. As organized, this finance corporation will represent both of the two rival interests which have from the first sought to obtain control of the Northern Pacific road in order thereby to control the Burlington system. While James J. Hill, the president of the Great Northern road, will be president of this company, prominent representation will be afforded to the so-called Harriman directors. It is impossible to ascertain exactly what disposition will be made of the Burlington company, although apparently the settlement involves a lease of this railroad back again to a Chicago, Burlington and Quincy *Railway* company, which shall operate it as an independent property, or, rather, as a railroad which should, while serving the Morgan-Hill interests in the Northern transcontinental lines, in nowise jeopardize the interests of the Union Pacific properties. In conclusion, it is pertinent to call attention to the magnitude of this enterprise, involving a total capitalization of more than $1,000,000,000. This figure is obtained by the addition of the $400,000,000 of share capital to $617,000,000 of funded debt of the constituent companies.

PURPOSES OF RECENT RAILROAD CONSOLIDATION.

The older and more familiar object of consolidation incident to the growth of separate and individualized systems is, of course, the extension of facilities for securing business. Among consolidations of this kind may be mentioned distinctively the purchase of the Western New York and Pennsylvania road, giving another outlet to the Pennsylvania system upon the Great Lakes, and the lease of the Boston and Albany by the New York Central. A second purpose is the elimination of competition. Older examples of this policy are, for instance, the purchase of the West Shore Railroad by the New York Central and the strenuous efforts made by the late Commodore Vanderbilt to secure control of the Erie Railroad in order to steady the trunk line situation. This phase of consolidation seems to have received particular attention in the last few years. It is undoubtedly the leading principle in the extension of the Pennsylvania Railroad interests in the Southern trunk lines, such as the Baltimore and Ohio, the Chesapeake and Ohio and other soft-coal carriers. Rumor has it that the Wisconsin Central road, which has long been a disturbing element in the Northwest, is to be taken over jointly by the stronger properties within whose territory it lies. The purchase of the Mobile and Ohio, a notoriously indiscriminate rate cutter, by the Southern Railway may have been dictated in part by this same reason.

TERRITORIAL GROUPING.

The third and most important object sought in recent consolidations, however, remains to be mentioned, deserving treatment somewhat more in detail. An obvious and logical result of the wholesale consolidations of the last two years may be to apportion the entire country between great groups of railroad interest, each of which shall entirely dominate the situation within its own area. This policy of territorial grouping or division of the field is not new in Europe. It was the expedient finally adopted after years of disturbance in France, and its results have been in the main salutary. It is likewise the policy which has been pursued as between the various express companies operating in the United States for a number of years. On American railroads it was first exemplified in the case of the New England territory, where conditions most nearly approached those which prevailed in western Europe. This culminated in the agreement of 1893 by which the Boston and Maine Railroad and the New York, New Haven, and Hartford road agreed to keep out of each other's territory, each developing its own resources to the best of its ability. The recent lease of the Fitchburg Railroad and the purchase of the Central Massachusetts by the Boston and Maine completed this plan of division. All the railroads in New England at the present time, except two in Vermont, are segregated in two groups, lying respectively north and south of the Boston and Albany Railroad, which affords a mere outlet to the coast for the New York Central.

Such a policy of division of the field or territorial apportionment would seem to be a logical result of the community of interest plan which has been already described. Both alike seem to be in some degree also the product of the prohibition of pooling by the Act to Regulate Commerce in 1887. Territorial division of the field is, however, essentially different from community of interest. The latter implies that each road throughout a section of the country shall be represented adequately upon the directorate of every other road. Such a situation, which might make for harmony, will, however, as it appears, speedily become complex. The distinction between the two may be shown by developments in the case of the Chesapeake and Ohio, to which reference has already been made. The control of that road was originally secured by the New York Central and Pennsylvania; that is to say, the standard trunk line interests jointly. It soon became apparent, however, that the interests of the Pennsylvania road in the Chesapeake and Ohio were far more intimate than those of the New York Central, the latter road merely being concerned in the prevention of rate cutting. As a result, an exchange of holdings seems to have taken place to the end that the Pennsylvania is allowed to dominate the Chesapeake and Ohio which operates alongside of it, and which

is likewise engaged as a rival in the bituminous coal traffic; while on the other hand investments of the Pennsylvania road in properties contiguous to the New York Central are released in favor of the Vanderbilt interest. In other words, an exchange of investments takes place on the basis of territorial apportionment. Community of interest control is superseded by division of the field. If such influences shall subsequently come into play throughout the remainder of the country, the division of the field policy so long peculiar to France may become an established fact in the United States.

Considering the United States as a whole, it appears that the character and scope of such territorial grouping as a possible development of the future may be determined with some definiteness. In the first place, the New England roads are already consolidated on such a basis. Secondly, in trunk-line territory the division of the field seems to have been recently progressing as described; that is to say, the Southern trunk lines are under the control of the Pennsylvania road, leaving alone the Erie and other minor properties as independent. Rumors that the Erie, the Lehigh Valley and others are to be dealt with under the community of interest plan are rife, as also that the coal interests of some of these roads are to be brought under common control with the other anthracite carriers, whereas their general transportation interests will be affiliated with the standard trunk lines. This latter policy in the case of the Delaware and Hudson has been repeatedly predicted. The third territorial group centers in the Southern States. In this section of the country the Southern Railway is reaching out and absorbing branches as well as competitors in all directions. Its relations with the Louisville and Nashville have not always been distinctly competitive. Practical pooling at important points has long existed. If, however, as seems probable, the Southern road should secure an inlet to Chicago as it has already secured an entrance into St. Louis, it will come into distinctly competitive rivalry with the Illinois Central, and then to a larger degree with the Louisville and Nashville. Until this time the prospects of wholesale combination on the basis of community of interest or otherwise appear to be rather unlikely. A fourth group is composed of the "granger roads" operating in the territory northwest from and tributary to Chicago. These roads are controlling a larger and larger proportion of local business, mitigating the ardor of competition, and, as we have seen, the absorption of the Burlington road by the Great Northern and Northern Pacific companies has altered the status of affairs very considerably. The possibilities of consolidation of these independent "granger" properties are perhaps more remote than in any other part of the country. In the Southwest, last of the five territorial groupings, there is strong evidence of a tendency toward con-

solidation. This seems to be progressing under the dominant influence of the so-called Gould properties, notably the Missouri Pacific and the Iron Mountain Railway. These roads if closely affiliated in interest with the Denver and Rio Grande, which has just absorbed the Rio Grande Western and the Colorado Southern, would constitute a vast network. The five groups already described leave but one remaining—namely, the transcontinental lines. These railroads, five in number, have, with the exception of the Atchison, Topeka and Santa Fe, been recently brought distinctly under the community-of-ownership policy of operation. That, in fact, is the significance of the developments in the Northern Pacific directorate, which have been described at length. The situation in this territory has been vastly improved by the developments there noted. In the first place, the anomaly of the control of the Central Pacific from Ogden to San Francisco by a railroad entirely independent of the Union Pacific, which alone enters Ogden from the east, has been eliminated. To be sure, California still remains under practical monopoly of the Southern Pacific Company, but a transfer of the Central Pacific to the Union Pacific would be a natural and desirable outcome of the recent consolidations. At the latest writing it appears that the Union Pacific Railroad interests dominate the entire transcontinental situation, and by so doing will be able to direct their affairs along a definite and harmonious policy.

THE EFFECT OF CONSOLIDATION UPON FREIGHT RATES.

Three possible effects of railroad consolidation upon freight rates are discernible. The first is that they will undoubtedly tend to steady rates and to eliminate personal discrimination and rate cutting. The second is that they tend to retard the fall of freight rates and perhaps even to induce an actual advance. The third is that they may operate profoundly to modify the adjustment of freight rates as between different cities, markets, and sections of the country. These may be considered *seriatim*.

EFFECT ON DISCRIMINATIONS.

It can not be denied that a most beneficent result of railroad consolidation will be the probable elimination of the temptation or even necessity of granting special rates to favored shippers. This is discussed in another connection, as also the question as to whether the legalization of railroad pools might not have produced the same beneficent result. The difference between the two, however, is that consolidation once effected becomes permanent, whereas pooling agreements permit of readjustment from time to time to suit changed conditions. Accept-

ing, however, the recent developments as a fact and not as an alternative, it must be conceded that the elimination of the power to compete will at the same time, in the words of the chairman of the Interstate Commerce Commission, "eliminate the power to discriminate." For the first time the railroads may effectively present a united front to industrial combinations, or to the large shipper who seeks to compel concessions under threat of a diversion of his business to a rival line.

EFFECT ON LEVEL OF RATES.

As to the second effect upon rates, namely, that consolidation opens the way to a higher range of charges, it appears that the events of the last two years lend force to this objection. Again quoting from the Interstate Commerce Commission:

> It is idle to say that freight rates can not be advanced. During the past year they have been, by concerted action upon a vast volume of traffic, advanced in every part of this country. It is equally idle to say that they will not be advanced. It is both human nature and the lesson of history that unlimited power induces misuse of that power. Railways are not combined for the purpose of "extortion and abuse," but none the less should the people provide some protection from that possible result of the combination.

It may confidently be asserted that at no time in the history of American railroads has the need of efficient, wise, and firm supervision by public authority of the terms and conditions of transportation been more imperatively demanded than at the present time. It may be conceded, of course, that so far as local rates are concerned, these consolidations do not change the situation in the least. Local freight rates are the result of a monopoly, except in so far, as we shall see later, as it becomes the interest of the railroad to develop its business by wise concessions. Where the consolidation most probably invites the maintenance or even the advance of freight rates is upon the great volume of through traffic. Upon this vast aggregate tonnage an addition of a few mills per hundred pounds amounts to an enormous increase of revenue to the railroads; and the difference of those few mills is too slight to make or to mend the conditions of competition in foreign markets. In other words, there is a possibility that the revenues of the road may be enormously increased directly at the expense of the producer, and especially of the farmer, unless some wise regulation be enforced.

EFFECT ON ADJUSTMENTS BETWEEN LOCALITIES.

The third and very serious effect of railroad consolidation will undoubtedly be to modify the present rate adjustments as between American cities and producing centers. This is particularly the case with the consolidation of the great trunk lines of the country. Small

roads with local interests are often closely identified with the welfare of favored cities, and the absorption of these local roads may profoundly affect the status of rates made to those places. Thus, for instance, almost all the great seaports of the country have been developed by the direct interest of particular trunk lines. Baltimore dates its origin as a great seaport from the prosperity of the Baltimore and Ohio Railroad. The Boston and Albany Railroad has contributed enormously to the development of Boston. New Orleans, so far as its export business is concerned, owes much to the Illinois Central Railroad. Mobile owes its prominence to the Mobile and Ohio Railroad, which always worked primarily for the interests of its own territory. Suppose, now, that these roads with localized interest are merged in great consolidations, which are even less mindful of local interests than the original railroad corporation. The Southern Railway, operating lines to a half dozen seaports, has no longer a particular interest in making the Mobile and Ohio road serve its former constituency. The Chesapeake and Ohio, now transferred to the Pennsylvania system centering in New York and Philadelphia, is no longer engaged in developing exclusively the port of Newport News. Even Boston, as voiced by the opinion of its legislators, hesitated a long time before committing its interests in the export business over the Boston and Albany Railroad to the control of the New York Central, which has always made for the prosperity of New York.

This readjustment of traffic relations may operate in still another way. The greatest revenue of a railroad is, of course, always obtained by securing the longest possible haul. The longest possible haul that a road prorating with another road can have arises when business originates at one terminus of the line. This, in fact, is one of the reasons for the prominence of the Southern Pacific Company in transcontinental business—that by reason of its steamship line to New Orleans it carries the goods from New York to San Francisco without prorating. This influence causes transcontinental lines to endeavor strongly to build up manufactures and jobbing trade at their eastern termini—St. Louis, Chicago, or St. Paul. This is the reason to-day why those cities have all been given precisely the same rate to the Pacific coast which is enjoyed by New York, Philadelphia, or Boston. Suppose, now, that these transcontinental lines affiliated so strongly with the eastern trunk lines as to transfer virtually their eastern termini from the Mississippi to the Atlantic seaboard; or that the Missouri Pacific system, through the Wabash road into Pittsburg, secures a terminus east of St. Louis, is it not plain that such a system of roads could make more money by hauling goods from its uttermost eastern termini rather than from what would now be an intermediate point on the Mississippi River? Or take another example: Atlanta, Ga., has undoubtedly been built up by railroad competition. There is no

geographical reason for its present prominence, either in the fertility of the surrounding section or the presence of waterways. The fact is, that Atlanta happened to be the terminus of roads entering the South from the Virginia gateways, and also the terminus of roads coming in from the seacoast at Savannah. The Western and Atlantic Railroad, built by the State of Georgia as an outlet to Cincinnati and Louisville, also ended at Atlanta. Each one of these roads got its maximum revenue by stimulating business at its terminal point. The best way to stimulate this business was to give peculiarly advantageous rates. In the case of Atlanta they do not seem to have been made public, but there is little doubt that private rebates have made up for many disabilities in the published tariffs. Of course this is only one factor in the growth of a city. Enterprise and abundant capital have been extremely influential. Now, let us suppose that the Southern Railway system, instead of ending at Atlanta, extends its lines from Washington to New Orleans, absorbing practically all of the formerly competing lines. Atlanta now becomes a way station. It is a great city, with an established reputation, prosperous manufactures, commercial enterprise, etc. Is it not possible that the railroad factor may be considerably modified? Such would seem to be a conservative view to take of the matter.

EFFECT OF CONSOLIDATION UPON INVESTORS.

A clear distinction should be made at this point between the actual effects of consolidation as distinct from the effects of consolidation effected under peculiar conditions. Applied to present circumstances, it must be recognized that the conditions under which the present great consolidations have taken place have been abnormal in respect to volume of business, earnings, and speculative market prices. As a result both of prevalent optimism and of keen rivalry for the possession of properties, the prices at which most of the consolidations of 1900–1901 have been effected have been exceedingly high. Thus, for instance, the Central Railroad of New Jersey has been acquired at the highest price for which the stock has sold for twenty years. The price at which the Pennsylvania Coal Company is transferred to the Erie Railroad is vastly above any preceding quotations. The returns to the original shareholders were in the neighborhood of $800 per share, $100 being par. The significance of such transactions lies in the fact that in a number of instances stocks acquired at these high prices are paid for by the issue of bonds which take priority over the previously existing stock issues. Control of the Southern Pacific system by the Union Pacific Railroad has involved a very large expenditure for stock at prices which, judged by the general level of railroad securities, are inflated. Thus, in the case of this consolidation, additional fixed

charges of $1,600,000 must be provided for before dividends upon the original stock become possible. It is apparent that this evil is almost inseparable from transactions of this kind, inasmuch as promotion and the issuing of new securities can be effected to advantage only when speculative interest is keen; that is to say, new issues of securities can be floated to advantage only on a rising market. The converse of this proposition is that consolidations of this kind are crystallized in a permanent fixed charge, which must be met in future throughout periods both of depression and of prosperity. Under present conditions the only safeguard possessed by the investor is the integrity of the banking interests involved. Whether the purchase of a road like the Chicago, Burlington and Quincy at a price for the stock of $200 is a good bargain or not must remain for the future to determine.

One point is clear beyond the shadow of a doubt. It is distinctly inimical to the interest of the investor that the same party shall be both buyer and seller in the same transaction, unless some supervision, or at all events, publicity, has been secured. Transactions like the sale of the Central Railroad of New Jersey to the Reading Railroad, where the same banking house is in control of the directorate of both roads, certainly invite speculation, and may easily lead to fraud. It is not intended by this to inveigh specifically against the transactions named. Criticism is directed against the policy and against possible abuses which may result in future unless safeguards be provided. To take another instance, the purchase of a community of interest representation in the Northern Pacific Railroad by the Union Pacific may conceivably be the part of wisdom. It is highly questionable, however, whether the best interests of investors are conserved when such purchases are made under conditions as described heretofore in this report. Especially is this the case if the bankers who make the purchase, which is necessarily of a speculative character in such a market, afterwards relieve themselves of the financial burden by unloading it upon a second railroad company in which at the time they happen to exercise a controlling interest. The possibilities for fraudulent profit are something enormous under such conditions. Formerly transactions of this kind were often effected by individuals who represented another person, or, by their families, were dominant influences in the directorate. Thus, for instance, the Vanderbilt system has for many years been held together until the present tendency to consolidation, not by actual ownership of the stock of subsidiary roads by the parent company, but by the fact that the Vanderbilts in their personal capacity dominated the policy of the subsidiary roads. With the enormous increase both in number and magnitude of such transactions, the capital required now exceeds the actual investment capacity of any except a few great fortunes. From this has resulted the practice of buying speculatively the stock of rival

companies, and thereafter selling it to other railroads which are actually controlled. In these latter cases the credit of the parent company is thereupon used to raise the funds for the original transaction. Were the details of such dealings open to the public, the abuse would be corrected by publicity, but it is plain that such purchases must of necessity be kept secret until the plans are virtually consummated. The development of completer publicity in the annual reports of railways is providing a certain guarantee of good faith to the investors, but much yet remains to be accomplished in this direction.

Other minor dangers incident to these consolidations, so far as the investing class is concerned, deserve mention. The grafting of one railroad system upon another always entails the possibility of charging a strong road with the burden of carrying a weaker one. In some cases this has been the unexpressed purpose of the consolidation. Thus, for instance, a road which is already heavily capitalized directly and whose earnings are so large as to perhaps invite regulation in the interest of the public may, by taking upon itself the burden of carrying a nondividend road, succeed in thereby watering its stock through exchange of securities without exciting suspicion. This device has been used with good effect in the case of consolidation of street-car lines. It should be noted in this connection that a peculiarity of some of the consolidations of 1900 is that the parent company is oftentimes the smaller, or financially less powerful one. As a case in point, it is the Northern Pacific Company, bankrupt within a very few years, which assumes the obligation of carrying the Burlington road, one of the most powerful and prosperous corporations in the West.

EFFECT UPON SERVICE AND OPERATION.

One of the great advantages of combination, whether in industry or in railroads, is that it affords an opportunity for widespread economies of operation. The useless duplication of services is eliminated. Thus, for instance, a great number of freight-soliciting agents, or of ticket offices, may be replaced by a few central offices which can easily handle the business for all the roads combined. On the other hand, experience shows that in almost every industry there is a limit in size beyond which efficient oversight by one set of officers becomes impossible. This difficulty in the case of railroads is, of course, easily overcome through the independent operation of the several parts of the system, which may, however, be owned in common. Thus, for example, the great Pennsylvania system is operated in two entirely distinct parts, east and west of Pittsburg and Erie, respectively. Both a financial and traffic policy is adopted in each case which is best suited to the conditions prevalent in the territory concerned.

It remains to be noted that the great consolidations which began in 1899 have been in the main heretofore merely financial; the traffic or operating problem has not as yet been dealt with. The only experiment in this direction is the appointment of a single traffic manager for the vast system of railroads now controlled by the Harriman interests. For the first time traffic and operation are to be entirely divorced. A number of roads, such as the Southern Pacific, the Union Pacific, the Oregon Railroad and Navigation Company, and the Oregon Short Line, are still to be operated independently, as before. But, on the other hand, the traffic interests of all these lines are to be centralized in the hands of a single official. In this way it is hoped that the incentive to secret rate cutting on the part of freight officials, which no amount of financial control has heretofore been able to stop, may be abolished. There are indications that a similar plan is to be put in force on the Northern transcontinental lines, as representing the dominant interests of Mr. Hill. The result of this will be that these two general traffic managers will control absolutely between them the entire traffic policy of all the transcontinental lines in American territory. It is expected in such a case that they will act, not narrowly for any one of the particular roads, but as trustees in a general sense, acting for the best interests of all.

EFFECT OF CONSOLIDATION UPON LABOR.

The testimony relative to the conditions of railway labor in the United States taken by the Industrial Commission shows that the roads of the country act almost as a unit in their policy respecting strikes, labor organizations, etc. The iniquitous system of blacklisting at one time practically unified the policy of the railroads of the country for a number of years, so far as the employment of labor was concerned. It is difficult to say how consolidation, as recently exemplified, can change the condition of affairs to any considerable degree. It has, at times, been asserted that the interests of labor would be jeopardized by any attempt either at pooling or consolidation on the part of the railroads, by reason of the fact that such agreements often provided for an exchange of facilities as between roads in case of the outbreak of labor difficulties upon any one of them. This, it will be observed, has similarly been claimed as an advantage from the point of view of the employer in industrial combinations upon a large scale. With respect to railroads, however, the extension of the great railroad brotherhoods throughout the entire country has so far antedated the extension of railroad consolidation as to diminish greatly the importance of this consideration. A strike upon any line in the country is now likely to involve by sympathy all connecting lines. This factor in consolidation, as a consequence, seems to be greatly minimized.

A great deal has been said about the advantages of consolidation from the point of view of increased wages and improved conditions of employment. Stress has been laid upon the strong contrast between the number and proportions of men employed during the last two years, characterized by consolidation, and during the preceding decade. Such comparisons, however, are necessarily fallacious; for, in the first place, the railroad system is growing in extent and density, and increased employment would follow as a matter of course. Moreover, such a period of prosperity as has characterized the years subsequent to 1897 would contrast most favorably with the lean years of 1894 and 1895, absolutely regardless of consolidation. It is possible that certain advantages in the matter of wages may obtain in the improved facilities and higher speed which railroad improvement has entailed. But these are in no wise directly concerned with railroad consolidation, and deserve treatment in an entirely different connection. And, finally, it seems scarcely likely that the consolidations of great railroad systems will improve the conditions of labor so far as the development of a classified service, with promotion for merit, are concerned. Systems of the magnitude of the great trunk lines already permit of these incentives to faithful service, and the greater consolidations, not involving changes in operation, can have but little effect.

III. RAILROAD POOLS.

NATURE AND VARIETIES OF POOLS.

In order to discuss the wisdom of prohibition of railroad pooling by the Act to regulate commerce of 1887, it is first essential that a clear understanding should be gained of the nature of a pool and the purpose for which it is organized by the railroads. The late President Roberts, of the Pennsylvania Railroad, defines a pool as "an association of railroad companies for the purpose of a proper division of the traffic at competitive points and the maintenance of equitable rates that may be agreed upon." The late Mr. Blanchard, in his testimony before the Industrial Commission, quoting Senator Platt of Connecticut, defines a pool as "an agreement between competing railroads to apportion the competitive business; that, and nothing more." These citations define specifically what a pool in principle is. A great number of other functions, such as the prevention of fraud and the management of a clearing-house, have in the past been intrusted to traffic associations, which at the same time exercised supervision over pooling. These traffic associations, with all their varied functions, except perhaps the pooling of freight, still exist. This discussion of the nature and significance of pooling, however, has absolutely nothing to do with any of these other details.

Attention should be concentrated specifically upon the division of business at competitive points, to the end that equitable and stable rates may be maintained.

In order to illustrate clearly the pooling principle, let us take a concrete example. The following table shows the number of tons of dead freight forwarded from Chicago to the east during three and a half years over eight different trunk lines:

East-bound dead-freight tonnage forwarded from Chicago, etc.

[Report Transportation Interests of the United States and Canada, Fifty-first Congress, first session, Senate Report No. 847, p. 588.]

Roads.	1886.		1887.		1888.		First half of 1889.	
	Tons.	*P. ct.*	*Tons.*	*P. ct.*	*Tons.*	*P. ct.*	*Tons.*	*P. ct.*
Chicago and Grand Trunk	242,901.59	12.9	301,895.13	14.0	400,651.37	16.9	214,462.00	19.3
Michigan Central	368,688.50	19.7	363,862.93	16.4	377,107.72	15.9	186,324.00	16.8
Lake Shore and Michigan Southern	315,520.90	16.9	360,896.22	16.3	399,035.98	16.9	162,461.00	14.7
Pittsburg, Fort Wayne and Chicago	369,920.77	19.7	480,022.18	21.7	448,578.28	18.9	295,278.00	18.5
Chicago, St. Louis and Pacific	229,778.25	12.3	226,985.85	10.2	218,345.33	9.2	93,197.00	8.4
Baltimore and Ohio	166,929.14	8.9	238,894.16	10.7	263,964.05	11.9	136,916.00	12.3
New York, Chicago and St. Louis	159,647.58	8.5	201,149.07	9.1	222,555.18	9.6	109,880.00	9.9
Cincinnati, Indianapolis, St. Louis, and Chicago	19,001.17	1.1	36,387.19	1.6	16,650.89	0.7	1,635.00	0.1
Total	1,872,387.90	100.0	2,210,042.73	100.0	2,366,888.80	100.0	1,111,153.00	100.0

Consideration of this table shows that within variations of a few per cent the proportions of freight carried by the different roads remain fairly constant. At this particular time, to be sure, the charge was freely current that the Chicago and Grand Trunk was increasing its percentage at the expense of some of the more direct lines; but taking a series of years, and under normal conditions, such percentages do not vary greatly. They are determined by fixed conditions, such as the general reputation of the road for promptness and dispatch, its fairness in adjusting damages, etc. In other words, business has become distributed, as between these lines, to a large degree in a definite proportion. This fact may be further emphasized by comparing the table above with the table at page $\frac{\$35}{}$, showing the apportionment of similar tonnage in 1896. Assuming, then, that there is a certain natural division of tonnage on the basis of facilities and reputation, it is obvious that the granting of special rebates and favors by any one of the roads may temporarily increase its proportion of the traffic; just as the Grand Trunk seems to have increased its proportion during these three and a half years from about 13 to 19 per cent. Such an increase, disproportioned to any development in the facilities of the road itself during this short period, means the prevalence of special rebates and favors in order to divert traffic over that particular line. The incentive is strong on the part of freight agents, each of whom is seeking to establish a record; and of course the shippers are always

on the lookout for traffic officials whom they can induce to help them privately. In the absence of any agreement among the roads themselves, it is apparent that competition, as between these eight trunk lines, may easily result in an entire disorganization of any established rate basis. The more nearly bankrupt and consequently desperate, or the weakest and most circuitous, route is enabled by cutting rates upon its small proportion of traffic to inflict enormous damage upon the standard, first-class lines. A railroad pool, under such circumstances, is nothing more nor less than an agreement among the several parties concerned that each will accept a certain percentage of the entire traffic, which shall be guaranteed to it by the other roads. This guaranty obviates at once the necessity for urgently soliciting business by cutting rates, and at the same time it nullifies the threat of the large shipper to divert his tonnage from a road which refuses to grant him such concessions as he sees fit to ask. Such, in essence, is the nature of a pooling contract. It has absolutely nothing to do, in itself, with the establishment of rates. To be sure, the purpose of the agreement is to maintain rates at a definite figure; but the amount of those rates as thus figured may be determined by other causes, such as water or foreign competition, which are beyond the control of the roads themselves.

TRAFFIC POOLS AND MONEY POOLS.

These pooling agreements to divide competitive traffic may assume a number of different forms. They fall, in the first instance, into two great classes, known as traffic and money pools, respectively. The distinction between them is perfectly clear. In a traffic pool, referring back to our table, the Lake Shore road, for instance, is guaranteed, let us say, 16 per cent of the east-bound dead-freight tonnage from Chicago by all its competitors. If, as this table shows in the first half of 1889, its percentage falls for some reason to less than 15, enough tonnage is diverted from other roads whose percentage is in excess of their allotment to make up the difference. A serious objection to this form of pool is patent. It necessitates the diversion of freight from one road to another, thereby often running counter to the expressed wish of the shipper. It seems to be proved that the amount of such variation from established percentages is usually very small, and that there is always enough freight open to shipment by any route, without expressed preference of the shippers, to obviate this difficulty. Nevertheless, it must be conceded that this objection is a real one. In order to meet it, the railroads have often preferred to organize their pools upon another basis. This second type of division is known as a money pool. Under such an arrangement the railroads severally guarantee one another a certain percentage of the total revenue accruing, either in gross or net, from the transaction of the business pooled. Under such an arrangement the gross or net earnings, as the case may

be, are divided in certain percentages, entirely irrespective of the amount of business which may happen to pass over the several lines. This, of course, would be unfair unless some allowance were made for the actual expense of conducting transportation when the amount over a particular road happened to be greater than its particular allotment of earnings would be. Consequently, it is often customary to allow each road to handle all the traffic which comes to it naturally, but to provide that after the deduction of a certain proportion, usually 40 or 50 per cent for actual outlay, the remainder in excess of its accrued proportion shall be paid over to other roads whose proportion of business carried during the period happens to fall below their allotment. In order to accomplish this result without friction, the roads have sometimes deposited a certain sum of money with the chairman, subject to his draft. If from his periodical reports he finds that the percentages allotted are varying somewhat from the actual percentages which happened to go by the different routes at that time, he can make good the difference by check. Of course it is important, in making the allowance out of the income for an abnormal proportion of business, to see to it that the percentage allowed for conducting transportation shall not be large enough to offer any possible inducement to an unscrupulous road to carry this extra business for even the moiety of rate which may remain. In the old Southern Railway and Steamship Association, for instance, at one time only 20 per cent of the gross receipts was allowed for hauling an excess over the allotted amount, for the expense of hauling. The remaining 80 per cent was to be turned into a pool, to be divided among the roads which had received less than their fair share.

The particular difficulty with many pools exists in the disinclination of the roads to pay over money which, in a sense, it seems as if they had earned, having actually transported the freight. The deposit of a certain balance in advance, however, as above described, has, in experience, helped to mitigate this defect. Experience seems to show that when percentages are agreed upon for a definite period, there is always a temptation for each road to endeavor to increase the percentage of its traffic actually carried, in order to prove its competence for a larger share in subsequent apportionments, when the existing agreement shall expire. In other words, rate cutting, special favors, and concessions may still exist, not for the sake of their immediate advantage, but in order to affect the division in future agreements. Moreover, money pools are liable to a very peculiar abuse, which, from a public point of view, renders them far less desirable than traffic pools. It is always possible that money payments may degenerate into a mere subsidy to weak roads, or a premium for virtuous conduct to unscrupulous ones. As instances of this possible abuse, the payment of almost $900,000 to the Panama Railroad prior to 1892, and also the payment of $500,000 annually which was made

for some years to the Erie Railroad, may be mentioned. In each of these cases the expressed purpose of the subsidy or "space rental" was practically to induce those carriers to refrain from soliciting business actively—action which, on the part of circuitous or irresponsible carriers, almost always means, in practice, to abandon that business.

RAILROAD POOLS BEFORE 1887.

The history of railroad pooling in its various forms, before and after the Act to regulate commerce in 1887, offers some interesting contrasts. The earliest pools were, of course, tentative in character, but at the same time they were devised to meet relatively simple traffic situations. Among the first of them may be mentioned the pool which for many years existed between the Chicago and Northwestern, the Rock Island and the Burlington roads, for their Chicago-Omaha business. Finding at an early time that their interests could be best served by cooperation, these three roads, in 1870, agreed that each one should carry one-third of the traffic between the points mentioned. This percentage was maintained throughout the agitation of the granger period, and conduced greatly to stability of rates. It was this pool which afterwards, in 1884, become merged into the Western Freight Association. In a similar way, in 1876, and for a few years thereafter, stability in rates between Chicago and St. Louis was maintained by the Southwestern Railway Rate Association. One of the strongest of the early pools was the one organized and maintained in the Southern States through the dominating influence of the late Albert Fink. It was far more comprehensive in scope than either of the two others, covering at first all business between Southern points and Eastern cities, afterwards being extended to cover business to Western gateways as well. This association existed from 1875 to 1887, when it was remodeled to suit the changed legislative condition. In addition to the associations above named, the growth of pooling by the trunk lines should be mentioned. As a result of the panic of 1873, and of the ruinous rate wars of 1876, the first actual agreement to pool rates was entered into in 1877. This had reference solely to west-bound business, and was distinctively a traffic pool, with diversion of freight in order to make good the allotted percentages. Two years later, the beneficial results of this organization led to the establishment of the Joint Executive Committee of 1879. With varying fortunes, determined as well by bad faith on the part of the railroads as by popular hostility, these organizations existed under various forms until 1887, when pooling was prohibited by law. Especially in the Northeast, the Trunk-Line organization in 1885, as effected by Mr. Fink, had reached a high degree of efficiency, determined by the experience of the preceding decade. This was a money pool, involving monthly settlements and deposits.

RAILROAD POOLS SINCE 1887.

The enactment of the law to regulate commerce, which expressly prohibited pooling contracts between railroads, necessitated an immediate readjustment to suit the changed conditions. The situation being so peculiar in different parts of the country, the development may be best considered by sections: First, pooling on the trunk lines east of Chicago; secondly, in the Southern States; thirdly, in the West; and fourthly, upon the transcontinental roads.

TRUNK LINES.

The trunk lines immediately acquiesced in the provisions of the Interstate-Commerce act by entering into new articles of association on the 7th of April, 1887. They seem to have adopted, in place of the old division of traffic or earnings, a system of differentials, by which the weaker roads were enabled to secure their proportion of business by making a fixed concession in rates. The Grand Trunk Railway of Canada was not a party to this agreement. It immediately proceeded to take advantage of the relaxation of joint control, by cutting rates upon dressed-beef traffic from Chicago east. This action was immediately met by the standard all-rail lines, and a serious rate war resulted, which entirely disorganized the situation for some months. For a part of this time the Grand Trunk road seems to have carried, as in 1887, about 47 per cent of all the dressed beef transported. The outcome of this ruinous contest was a new agreement in 1889, to which the Grand Trunk Railway became a party. This pool, being more comprehensive, seems to have conduced to stability in rates, so that for two or three years conditions were fairly satisfactory. The agreement seems to have entailed the payment of a practical subsidy to such roads as the Erie, which in two years from April, 1889, received over $530,000 per annum as a premium on virtue. This actual money payment seems to have taken the place of an earlier agreement by which tonnage was actually diverted to this road. Both forms of gross and net money pools were in fact tried.

The regulation of roads in trunk-line territory was intrusted to two subsidiary associations, known as the Trunk Line and the Central Traffic associations, with headquarters, respectively, in New York and Chicago. The former had supervision of rates in the eastern section, while the latter supervised rate adjustment on east-bound shipments from Chicago. Various attempts were made to consolidate the work of these two associations—in November of 1892 and again in 1894. In the latter year particularly, a traffic pool of east-bound business, which has always been more difficult to handle, owing to the multiplicity of points of initial shipment, was practically arranged. It seems to have

been an attempt to regulate rates by imposing a fine of $10,000 for each infraction of the agreement, this arrangement having worked satisfactorily in the South under similar circumstances. Finally, in January of 1896, the entire business of the trunk lines was intrusted to the so-called Joint Traffic Association. The control of traffic division was vested in a permanent board, representing each of the nine leading trunk lines. Its recommendations were to be enforced by the imposition of a fine of $5,000. As indicative of the apportionment of east-bound business made under an award of arbitrators, the following table is of interest. Comparison of this with the preceding table, giving the apportionment ten years earlier, shows that the balance of power between the trunk lines had become very little altered.[1]

Apportionment of east-bound shipments from Chicago, 1896.

[U. S. Supreme Court, October term, 1896-97. United States *v.* Joint Traffic Association, No. 341. Brief for United States, p. 50.]

	Live stock and dressed meats.	Dead freight.
	Per cent.	*Per cent.*
Baltimore and Ohio Railroad	4.5	8
Cleveland, Cincinnati, Chicago and St. Louis Railway	1.1	5.8
Chicago and Erie Railroad	9.4	11.2
Chicago and Grand Trunk Railway	13.2	11
Lake Shore and Michigan Southern Railway	19.8	14.2
Michigan Central Railroad	16.1	13.6
New York, Chicago and St. Louis Railroad	11.3	8.2
Pittsburg, Cincinnati, Chicago and St. Louis Railway	10.7	7
Pittsburg, Fort Wayne and Chicago Railway	8.7	14.2
Wabash Railroad	5.2	6.6
Total	100	100

This seems to have been an actual traffic pool, with diversion of freight to secure the allotted percentages. Its efficiency, however, never received a fair test, inasmuch as action was immediately brought at the instigation of the Interstate Commerce Commission to declare the contract illegal under the Act to regulate commerce. In spite of the decision of 1898, rendered by the Supreme Court of the United States, which declared this association illegal, it continues to perform many functions of a cooperative character, and has not occasioned serious complaint on the part of shippers. There seems to be some sort of agreement between the lines by which harmony is engendered. The Pennsylvania and Vanderbilt roads are acting as a unit, and the elimination of the Baltimore and Ohio and Chesapeake and Ohio as rival lines has conduced to harmony. The Erie road has been more efficiently controlled.

WESTERN LINES.

In the territory west of Chicago the prohibition of pooling in 1887 produced widespread demoralization. The old pools were dissolved,

[1] See page 330.

and as a result, during 1888, there were disastrous rate wars throughout the West. Early in 1889 the presidents of the roads concerned met and organized the Interstate Commerce Railway Association, which was intended to exercise control throughout the territory west of Chicago, with the exception of the transcontinental and international railways. It was general in its scope, having for an object merely to maintain rates and to enforce the law. Provision was made for a guaranty fund, for statistical reports to secure publicity, and for the payment of penalties. This association was intrusted to the management of the Hon. Aldace F. Walker, who had formerly been a member of the Interstate Commerce Commission. It went to pieces, however, within a year. In a few months another presidents' agreement was entered into, which in turn resulted, in January of 1891, in the organization of the Western Traffic Association. This was less centralized than its predecessor, and was rather in the nature of a federation. Under it there were to be organized more highly specialized associations, to deal with traffic in particular territories, such as the Gulf, trans-Missouri, and transcontinental business. Private traffic agreements were not prohibited, as in its predecessor, but provision was made that they must be filed and made open to inspection. Soon after this time—in 1892—the United States filed a bill against the most efficient of the subsidiary organizations under this Western Traffic Association, known as the Trans-Missouri Freight Association. This had been in existence since early in 1889, a committee representative of the various roads concerned having power to enforce agreed rates under penalty of a fine. This organization, which seems to have successfully performed many of the functions of a traffic pool, was upheld in the United States circuit court, but in 1897 it was held by a majority of the United States Supreme Court to be in violation of the anti-trust law of 1890. As a consequence, immediately upon the rendering of this decision, the Association was dissolved. Inability to enforce any agreement, either by fine, by diversion of freight or division of earnings, has rendered it impossible for the roads operating throughout this territory to publicly pool their interests. This object seems to be now in process of attainment by the entirely distinct device known as community of interest or ownership, elsewhere described.

SOUTHERN LINES.

The long-established Southern Railway and Steamship Association was greatly weakened as an efficient regulator of rates by the prohibition of pooling in 1887, although for a few years it was enabled in a halting way to prevent serious rate wars by the imposition of fines upon its members. The temptation to rate cutting incident to the depression of 1893, however, proved too great for it to withstand, and dissolution resulted. In 1895 the Southeastern and Mississippi Valley

Freight Associations took its place. These seem to have been based upon a physical division of business. At the present time there are in existence three distinct railroad associations south of the Ohio and east of the Mississippi, known respectively as the Southeastern Mississippi Valley Association; the Southeastern Freight Association, with headquarters at Atlanta; and the Associated Railways of Virginia and the Carolinas, with headquarters at Richmond. For purposes of rate adjustment the associations are slightly different, although the divisions in the main correspond. A number of traffic pools for the division of cotton and other local business certainly exist, as described hereinafter.

PACIFIC LINES.

The only group remaining, that of the Pacific roads, has had a checkered history in respect to pooling since 1887. The roads concerned organized in 1888 the Transcontinental Association. This, like the trunk-line pools, endeavored to secure an equitable division of business by allowing a differential to the Canadian Pacific, and in the following year this differential was increased in order to prevent ruinous rate cutting by this extraterritorial competitor. Objection from the Southern Pacific Company, however, led to constant discussion and dissatisfaction, so that in 1892 the Transcontinental Association was dissolved. Since 1892 the Canadian Pacific has not been a party to any transcontinental agreement, but has simply proceeded to take a differential of 10 per cent under the rates allowed by the other lines. The California roads organized a Transcontinental Freight Rate Committee in 1893. This was dissolved in 1897 and replaced by the Transcontinental Bureau, which included the Northern Pacific and the Great Northern. This organization has endeavored to harmonize action between the lines with indifferent success until recently, when the great movements toward consolidation have allowed a concerted action in all matters of traffic policy.

LEGISLATION AND COURT DECISIONS RESPECTING POOLING.

The history of section 5 of the Act to regulate commerce, which prohibits pooling, is of peculiar interest in the light of subsequent developments. The Senate committee, upon whose report the law was in the main based, reported specifically that it "does not deem it prudent to recommend the prohibition of pooling," adding that "the ostensible object of pooling is in harmony with the spirit of regulative legislation. * * * The majority of the committee are not disposed to endanger the success of the methods of regulation proposed

for the prevention of unjust discrimination by recommending the prohibition of pooling, but prefer to leave that subject for investigation by the Commission, when the effects of legislation herein suggested shall have been tested and made apparent." This judgment was based upon the interrogation of a large number of witnesses, of whom only about one-third were opposed to the system of pooling. The Senate bill, in fact, originally passed without this section. Its preceding clauses were all based specifically upon experience as crystallized in laws of Massachusetts, and England and other countries. Section 5 alone, prohibiting pools, was entirely in the nature of an experiment, and was introduced only because of the stubborn insistence of Judge Reagan, of Texas, then chairman of the Committee on Commerce of the House of Representatives. In conference committee, at the last moment, this legislation was conceded by the Senate conferees, including Senator Cullom and others. It is important to emphasize this fact because the action of the United States in this respect has influenced very largely the policy of the several Commonwealths. By 1891 traffic agreements between parallel roads were forbidden by no less than fourteen States. At the present time, ten years later, analysis of the provisions of State statutes shows that the same prohibition exists in many other States. Pooling contracts have frequently been held illegal by United States and English courts, however, as being contrary to public policy. In all these cases reliance is placed upon the wholesome and curative effects of free competition.

Judicial interpretation of the clause prohibiting pools was not secured definitively until ten years after the passage of the act of 1887. As has been shown, many of the functions of division of traffic by pools were practically continued under various forms during this period. The matter was finally decided in the case of the Trans-Missouri Freight Association, respecting which a decision was rendered by the United States Supreme Court in 1897. It is of peculiar interest to note that this leading case was decided, not upon interpretation of the interstate commerce act itself, but under the provisions of the Sherman anti-trust law of 1890. Previous to this decision, both the United States circuit court and the circuit court of appeals had adjudged the Trans-Missouri Freight Association to be not in violation of the anti-trust law, and the decision of the Supreme Court reversing these judgments was rendered by a bare majority, four justices out of nine dissenting. Two questions were plainly before the court: First, whether the Sherman anti-trust law applied to and covered common carriers by railroad; and secondly, whether the Trans-Missouri Freight Association violated any provision of that act by being an unreasonable restraint upon trade. The court itself acknowledged that it was doubtful whether Congress originally intended to include railroads under the prohibitory provisions of the anti-trust law. Counsel for the carriers

showed, it would seem conclusively, that an amendment proposed by Mr. Bland to include railroads in the prohibition was rejected. The dissenting Supreme Court justices maintained that in the absence of a specific application of the anti-trust law to railroads, inasmuch as the anti-trust law was a general act, while the act to regulate commerce, antedating it by three years, was specific, the latter exempted the railroads, in any case, from the drastic provisions of the Sherman Act against combinations in restraint of trade. The court refused to consider other than mere questions of law, holding that if pooling were excepted it was the province of Congress to take appropriate action.

As a result of the Trans-Missouri Freight Association decision, and the rate demoralization which was thereby engendered, three bills were introduced into Congress in the fall of 1897 intended to correct the situation. Prior to this time, in 1894, a bill rehabilitating pooling had been introduced by Representative Patterson, and actually passed the lower house by a majority of 160 to 110. Three distinct policies are apparent in respect of the several bills proposed in 1897, representing the development of opinion which had taken place since the Patterson bill of 1894. The first of these, which represented the demands of the carriers without reference to the public, was introduced in the Senate by Senator Gorman in 1894, and by Senator T. C. Platt subsequently. It aimed to repeal Section 5 of the act of 1887. This merely permitted pooling agreements between the railroads, but gave them no legal status. The other extreme was represented by bills introduced in the House of Representatives authorizing carriers to make agreements respecting the distribution of competitive traffic, but adding the proviso that no agreement should become valid until approved by the Interstate Commerce Commission, which might at any time, moreover, withdraw its approval. A bill of a third type, in the nature of a compromise, introduced in the Senate, was substantially like the preceding one, except that it provided for appeal to the United States courts. This bill, introduced by Senator Foraker in 1897, received the official sanction of the representatives of the railroads. They were willing to concede supervision by the Interstate Commerce Commission, but were not willing to accept its decision as final without appeal to the courts. The necessity of some supervision of such traffic contracts is most ably set forth in the twelfth annual report of the Interstate Commerce Commission. It is unnecessary, however, to dilate upon these reasons, inasmuch as the railroads, through their representatives, conceded the right of approval by the Commission which was demanded.

The prime difficulty seems to have been that the Interstate Commerce Commission was unwilling to agree to any legislation which did not specifically enlarge the scope of its authority to determine the reasonableness of railroad rates. This attitude was taken in an official com-

munication addressed, in January, 1897, to the House Committee on Interstate and Foreign Commerce, opposing the passage of the Patterson bill. It seems to have been a result of the doubt cast upon the authority of the Commission to prescribe rates in the Social Circle case. It was maintained by the chairman of the Commission, before the House Committee on Interstate and Foreign Commerce, that the mere granting of power to approve traffic contracts would not afford adequate provision for the protection of the public against unreasonable rates. Without attempting to determine the validity of this position, a general examination of the discussions which took place at the time strengthens the impression that concessions were necessary upon both sides. The railroads ardently desired the rehabilitation and legalization of pooling contracts. They could not hope to secure the assent of Congress to such a proposition without specific recommendation to that effect from the Interstate Commerce Commission. This body, on the other hand, maintained that remedial legislation was necessary in order to give the Commission the control over rates and rate making which was originally intended to be conferred by the act of 1887. The Commission alleged that the railroads sought not merely a repeal of Section 5, but the legalization of pooling contracts, making them enforceable at law. This, it was urged with force, was more than the mere correction of unwise legislation in 1887. It partook, rather, of the nature of additional favors granted to the carriers. The Commission consequently withheld its sanction of any bill for legalizing pools, until such legislation as was deemed necessary for public interests should be conceded by the railroads. Individual members of the Commission seem to have so fully recognized the desirability of legalizing pooling as to be willing to permit its rehabilitation in any event. Thus, Hon. Martin A. Knapp, chairman of the Commission, specifically makes the following statement:

> I regard the fifth section of the present law, commonly known as the anti-pooling clause, as irreconcilably at variance with its other provisions. Let me say for myself, very frankly and very seriously, that rather than have such an enactment as is proposed in that bill added to the present law, it would be my wish and my judgment that you should legalize pooling in the most comprehensive and ample manner, without the slightest reference to the Interstate Commerce Commission.

In 1896 the Commission officially instituted proceedings to annul the Joint Traffic Association, which was simply a pool between the trunk lines from Chicago east. In its report for 1897, however, the majority of the Commission seems to have become convinced of the expediency of legalizing pooling contracts, provided suitable safeguards could be instituted.

Soon after the Trans-Missouri Freight Association decision, another, similar in purport, was rendered by the United States Supreme Court in the case of the Joint Traffic Association. This agreement was

entered into in 1895 by thirty-two railroads operating east of Chicago. It was attacked not only as in violation of the anti-trust law, as in the Trans-Missouri case, but also as being contrary to the provisions of the interstate-commerce act. An attempt was made to distinguish between this and the Trans-Missouri Freight Association case, on the ground that the latter association actually conferred power to fix rates, whereas the Joint Traffic Association merely provided for the adoption jointly of such rates as were in force. Both the circuit court and United States circuit court of appeals held that the agreement was not repugnant to the provisions of the act to regulate commerce. The force of the argument, however, in the Supreme Court was directed entirely to the interpretation of the anti-trust law, and it was finally decided, as in the preceding case, that the agreement was in contravention of that statute.

COTTON AND GRAIN POOLS.

As illustrative of the contention that contracts for pooling freight may have little or nothing to do with the making of freight rates, reference may be made to pools which have apparently existed for many years throughout the Southern States for division of cotton traffic. The existence of such a pool at Memphis is matter of judicial record, and similar pools, according to information of the Industrial Commission, exist at a number of other points throughout the South. The situation at Memphis is entirely typical. Cotton comes in from all the territory round about, as well as from remote sections of the South, and six railroads compete for its transportation. A large amount of this cotton is destined for export, and the remainder is in the main subject to a long haul to New England. Rates by water for export are, by the nature of the case, highly fluctuating in amount. They vary from day to day, unlike rail rates, according to the number and character of vessels which may be awaiting a cargo. This cotton is exported from the United States by any one of a number of ports, no less than thirteen, in fact, between New Orleans and Boston. Each railroad running into Memphis makes connection with a different port or group of ports. Long experience has shown that, without some definite agreement or understanding, a large number of different rates on cotton to Liverpool or Hamburg may be quoted on the same day, according as the freight goes out by Baltimore, Charleston, or New Orleans, etc. The annoyance and uncertainty to the shipper incident to such diversity of rates is plainly apparent. Such a situation offers every incentive to rate cutting and personal discrimination of the pernicious kind.

At Memphis, Montgomery, Shreveport, and a number of other points, consequently, where the situation is as above described, actual traffic pools have been instituted and still exist. Their validity has,

in fact, been upheld by the supreme court of Tennessee in a recent decision. The procedure is as follows: Each day a designated official, acting for all the roads jointly, receives by telegram from every port of export in the United States, a dispatch stating the prevailing rate of freight on that day. Each of the carriers serving these ports has a regular rate on cotton which it accepts for domestic traffic. The chairman of the Cotton Committee issues a bulletin each day, stating the domestic rate from Memphis to each port, and also the ocean rate prevailing on that day from that port to destination in foreign ports. The lowest combination of any of these rates from any port is accepted on the basis of this showing by all the roads concerned. Thus, for example, it may appear that on a certain day the combination of ocean and rail rates is such to Liverpool that via the Illinois Central to New Orleans they amount to 60 cents a hundred pounds; via the Southern Railway through Brunswick, 72 cents; via the Nashville, Chattanooga and St. Louis, through Savannah, 70 cents, and via the Southern Railway through Norfolk, 62 cents. The lowest joint rail-and-water rate prevailing for that day to Liverpool, on the basis of this showing, is the rate via New Orleans, namely, 60 cents. In the absence of any agreement between the roads, under these conditions, all the cotton on that day would go out with a rush towards New Orleans. On the following day it might happen that the lowest combination was via Savannah, and all the cotton would consequently go by that route. The result would be great congestion of traffic, alternating with periods of entire inactivity on the different roads. By the simple device of an agreement of all the roads affected to accept the lowest rate by any route on all traffic which goes out, and to accept it on the basis of an agreed percentage, all this inconvenience and uncertainty, both to the shipper and to the railroad, is obviated. The cotton moves smoothly and freely, and it is difficult to see how public interests are in the least jeopardized.

The preceding illustration is intended specifically to show how a railroad pool may be rendered powerless to make rates. The rates are made regardless of the percentage which prevails in the division. It must be conceded, however, that this is not always true. The Buffalo grain pool, which was investigated by the Interstate Commerce Commission in 1900, is a case in point. It was intended to provide for the division of all grain traffic between Buffalo and New York. The railroads concerned agreed upon certain percentages and upon a common rate. It was clearly shown in this investigation that where the pooling was entirely upon domestic business, it was possible to maintain a rate of 4 cents a bushel and to prevent a reduction to the rate of 3 cents, which had previously prevailed. This is a peculiar case, inasmuch as between two cities thus situated, no controlling factors beyond the power of the railroads to regulate seem to exist. It

was expressly shown that the Erie Canal is no longer a factor. Indirect competition by circuitous routes was also absent. On the other hand, the advantage of the situation was that absolute stability and the abolition of favoritism was secured. Whether the Chicago East-Bound Freight Committee is in charge of a similar pool of traffic is uncertain, but the desirability of joint action of the carriers is patent.

THE EFFECT OF POOLS AND POOLING.

Any discussion of the effect of pooling upon rates would seem properly to be based upon the assumption that pools are not intended to make rates, but rather to provide for a division of competitive business upon the basis of rates already made for the associated railroads by conditions beyond their control. The primary objection on the part of the public to railroad pooling seems to be based upon the idea that in some hidden way it is intended to increase freight rates. On the other hand, freight rates, as between Chicago and New York, are made by conditions imposed in part by water competition and in part by the competition of rival lines to Gulf ports. These and other influences peculiar to the character of the country are the ones which, as has been seen, have produced the momentous decline in rates during the last 30 years. It is claimed that railroad pools have endeavored to secure the maintenance of equal rates as between all shippers; that is to say, to prevent rate cutting by removing the one possible incentive to such action, namely, the desire to secure business which otherwise would go over rival routes. That pooling does not always operate to increase rates may be claimed on other grounds; namely, that cities, such as Chicago and Atlanta, where the most stable and efficient pools have existed, are the very ones which at the present time enjoy the lowest rates, both in and out. Moreover, it seems that under the most effective pools, rates have continued to decline as rapidly as in other cases; and inspection of the curve showing the movement of freight rates during the last 30 years[1] corroborates this statement, by its proof that since 1887, when pools were prohibited, the decline of freight rates has been far less considerable than it was in the preceding period, when pools were operative all over the country. Passenger traffic in the United States may still be pooled, this not being prohibited, as in the case of freight, and it is precisely upon this class of business that reductions have been least notable. It appears probable, moreover, that the device of guaranteeing percentages of traffic to weak as well as strong roads removes the main incentive for cutting rates. On the other hand, it must be conceded that pools should be based upon entirely natural and permanent percentages, as otherwise

[1] See p. 280.

they offer continually to the weaker lines the incentive to cut rates temporarily and artificially stimulate their proportion, in order to secure an increased allotment at the expiration of the agreement. In face of these facts, and inasmuch as pools exist at the present time, the question of public supervision becomes pertinent.

Several other objections to pools remain to be considered. One is that by agreeing upon certain percentages which are guaranteed, whether carried or not, the premium upon improved facilities for transacting business is thereby removed. In other words, that there is no longer the stress of rivalry, which seeks to tempt business through quicker service, greater safety, or dispatch in adjusting damages, etc. The answer is that failure to improve facilities commensurately with the facilities upon all the other lines concerned will operate disadvantageously in future agreements as to percentage, and that, consequently, each road must maintain fully its equipment and service in order to protect itself when the time for renewed allotment arrives. It is objected, also, that the prohibition of pooling has built up the strong at the expense of the weak lines.

The very nature of the opposition to pools on the part of certain interests suggests some advantages of their operation. A common objection is made by shippers to the right exercised by the railways under traffic pools to divert business from one line to another as required for the maintenance of agreed percentages. Making due allowance for established custom and preference, it nevertheless very often happens that the stubbornness of shippers, insisting upon the routing of their freight by particular lines is due to the fact that those lines are secretly making concessions in order to secure the business. This has been proved in recent cases before the courts. It explains the opposition of powerful interests to any agreement between the roads which will enable them to become independent of such tyranny. Of a somewhat similar character is the complaint made by certain representatives of the Chicago Board of Trade that pooling between the trunk lines has prevented many Western roads from securing business through Chicago by shrinking their proportion of the through rate. One of the most patent advantages of a traffic pool is, in fact, the power which it gives the virtuous roads to prevent rate cutting on the part of the more unscrupulous ones. Thus the late Mr. Fink maintained discipline among the roads in his traffic pools by the threat that, in case they departed from established rates by granting secret rebates, he would divert traffic from them as a penalty. The plain issue involved, in short, is of stable as against fluctuating rates. Fluctuating rates undoubtedly offer the possibility to a favored few to secure transportation at a lower cost; but the counterpoise is found in the fact that correspondingly higher rates are charged to the majority, who are not able to secure such favors.

EFFECT OF CONSOLIDATION UPON POOLING LEGISLATION.

It has very frequently been asserted that a primary cause of the notable tendency toward railroad consolidation since 1898 was the definitive prohibition of all varieties of traffic contracts or agreements by the Trans-Missouri Freight Association decision of 1897. This decision, as has already been indicated, was rendered upon the basis of the Sherman anti-trust law, without contemplation of the prohibitive provision of the Act to regulate commerce of 1887. According to the opinion of many jurists, in fact, the latter act could not reasonably have been construed to prohibit many of the traffic agreements which have been customary between carriers. It has been urged with great force that, cooperation among the railroads having been finally adjudged illegal, it became necessary to have recourse to a more drastic remedy, namely, consolidation in some one of its various forms. The question is an important one. The complacency with which the public, and particularly the press, have accepted the great consolidations of 1900 and 1901, is exceedingly striking in view of the hostility which has so persistently aimed to prevent the abolition of competition by pooling. If consolidation, as recently effected and as promised more abundantly for the future, is an effective substitute for pooling, it becomes obviously unnecessary for Congress to consider further the amendment of section 5 of the act of 1887. If, on the other hand, pooling and consolidation, while alike in some respects, are not equally effective in others, and especially if the tardy repeal of the prohibitive clause can serve to lessen the tendency to consolidation, it becomes important to consider whether such legislation should not be at once forthcoming in the public interest.

The first difference to be noted between pooling and consolidation is that the latter is much more comprehensive in its scope. Preceding paragraphs have sought to emphasize the fact that agreements for the pooling of freight form but a small part of the entire scheme of railroad cooperation. Agreements for the division of traffic constitute but the mere machinery by which a certain result is to be attained. They may or they may not exist, without thereby affecting the closeness of compacts relative to other forms of cooperation. Experience has abundantly shown that it is possible for railroads to maintain a large part of their identity, even reserving to themselves the power to make rates independently, under a pool, in exceptional cases, without thereby entirely nullifying the steadying influences of such traffic agreements. Consolidation, however, necessarily involves the unification of all interests as between railroads. A large part of their machinery, not only for handling traffic, but especially for soliciting it, may be profoundly modified. A pool does not necessarily put an

end to a certain degree of rivalry between the parties to the agreement, each of them, as has been explained, being still desirous of maintaining its percentage status in the periodic division. In other words, there may still under pooling contracts be as many freight agencies and as zealous regard for the interest of patrons as there was before. But consolidation, having for one of its primary purposes economy of operation as well as the prevention of competition, may conceivably operate to reduce facilities open to the convenience of shippers or travelers. In brief, pooling may still permit competition in respect to facilities. It may merely eliminate the ruinous phases of competition in rates, leaving still in force the healthful influences of reasonable rivalry. Consolidation proceeds to the uttermost to stifle competition of all kinds, whether in respect of rates or of facilities. Let us take a specific instance: Instead of there being three passenger trains every hour during the day between Chicago and Omaha over three rival roads, each of them endeavoring, by means of facilities offered, to maintain and perhaps to increase its allotment in a division of passenger earnings in the future, under consolidation two of these three trains each hour may be taken off. The result would be, undoubtedly, a great economy in operation, inasmuch as perhaps the entire traffic might be handled by one-third of the trains formerly run. The disadvantage is equally patent, namely, that with but one train each hour there is no longer the necessity for that active rivalry in affording comfort and convenience which formerly existed.

A second point to be kept in mind as between the effects of consolidation and pooling lies in the fact that consolidation can never hope to accomplish the steadying influence upon rates which is claimed for railroad pools, until such time as every railroad within a given competitive territory shall have been bought up and absorbed; in other words, to prevent competition in rates in the manner contemplated by an effective pooling contract, not only the important roads must be included, but also all of the subsidiary companies which may in any way, by combining, hope to form a competitive through route. That is to say, not only the *direct* competition of routes more or less parallel must be provided for, but what has, in our subsequent consideration of railroad competition, been termed *indirect* competition, must be also eliminated. Ruinous competition of the carriers between New York and Chicago may be conceivably prevented by a pooling of all the routes, whether direct or circuitous; that is to say, whether by a trunk line or by a combined rail and water route over the lakes, or a long haul around through the Southern States. Every possible competitor can be included and satisfied, so elastic are the percentages by which possible competition may be prevented. But consolidation of the roads between these important centers, to the end that rates shall be estab-

lished upon a monopolistic rather than a competitive principle, demands that all these carriers shall be bought up and controlled by some stock-holding scheme; for, long after the Baltimore and Ohio and Chesapeake and Ohio have been pacified by absorption, and after the Erie has been neutralized by community of ownership, there would still remain many indirect routes, each of which will be only too ready to take advantage of the inability of their great rivals to make any concession from the rates which they have made effective as between themselves. The situation is quite analogous to that of the contemplated abolition of competition through the formation of industrial combinations. A number of small competitors is always bound to thrive and prosper by reason, and at the expense, of the maintenance of monopolistic prices by the combination. The combination, in short, is their protection. As a consequence of this, however, the experience of industrial combinations is that it involves a continuation of purchases to eliminate each new competitor as it arises. Applying this to the railroad situation, it means inevitably that consolidation, once having begun, must, in order to accomplish the same results as pooling contracts, proceed until every one of these minor competitors shall have been absorbed. That is the reason why a division of territory into a number of specific groups, each absolutely monopolized by one interest, seems to be the only logical outcome of the consolidations which have been already accomplished.

The corollary of this proposition is that, while consolidation as it is seen to-day seems to be an almost inevitable product of the times, nevertheless its undue extension may be somewhat retarded by permission accorded to the roads to pool their traffic interests. Under such an arrangement, for example, there may still exist a practical consolidation or community of ownership between all the transcontinental roads with the exception of the Atchison, Topeka and Santa Fe, the Canadian Pacific, and trans-Mexican or isthmian routes. The situation will still be tolerable and rates maintained fairly steady if these outsiders may still be assured of a fair proportion of the total business by some traffic agreement. Denied this alternative, it would seem that the inevitable outcome of the consolidation must be, not to have secured the abolition of ruinous competition, but merely to have reduced the number of such competitors. Competition may be just as ruinous between two great systems like the New York Central and the Pennsylvania, each of which represents almost the last degree of the process of consolidation, as between a dozen less powerful roads. Its acuteness may even be intensified by concentration of power in two hands. Either these two great systems must agree upon some division of traffic which can be enforced despite the rivalry of railroad managers (which is just as likely to occur on systems having 20,000 miles of rail

as those having 5,000), or else one of the two giant systems must absorb the other. Then, and then only, will consolidation have attained the end which was originally sought.

The conclusion to be drawn from this review is that the present tendency toward consolidation, while it may have been stimulated by the prohibition of pooling, does not profoundly affect the question as to the expediency of removing the prohibition at this late time. Pools and pooling still exist; although outwardly called gentlemen's agreements or disguised in some other way, it is incontestable that in every case where consolidation has not proceeded to its uttermost limits, as in New England, traffic agreements exist. Railroad men are almost unanimous in the expression of their desire to have the inhibition removed. Representatives of commercial interests have, in the main, acceded to this opinion. As has been shown, the prohibition was not contemplated originally. It was included in the act only as a concession to certain opponents of pooling in the House of Representatives. The foremost among these, for example, Hon. John H. Reagan, now chairman of the State railroad commission of Texas, have greatly modified their views and urged the desirability of pooling contracts, subject to public supervision Representatives of public interests, such as State railroad commissions, from many States of the Union, in convention assembled, formally gave their approval of such legislation some years ago. Minnesota, then the sole exception, now, as represented by the secretary of its railroad commission before the Industrial Commission, has accepted this view. The lower United States courts, in adjudicating the question, all decided that pooling was not in restraint of trade; and the trans-Missouri decision, holding that the anti-trust law was applicable, was rendered by a majority—only five to four. Finally, a formal convention of leading freight associations of the United States has recently indorsed a law providing for the repeal of the prohibitory section of the statute. On the other hand, it is universally recognized that certain dangers to the shipper are incident to such action. Railroad pools may, and certainly have, in some instances, operated either to raise rates, or to maintain them in face of a tendency to decline. As a consequence, the majority of these appeals for remedial legislation are accompanied by a demand that pooling, if once more permitted by law, shall be subject to governmental approval and supervision.

IV. RAILROAD RATES AND DISCRIMINATIONS.

EXISTENCE OF DISCRIMINATION.

The primary purpose of the Act to regulate commerce in 1887 was probably the elimination of discrimination in freight rates. No other feature of railroad business, except possibly mistrust as to overcapitalization and exorbitant charges, occupies so prominent a place in the public mind. It is of the utmost importance, therefore, to ascertain the effect of the passage of this act during the 14 years that it has been in operation.

DESCRIPTION OF METHODS.

The forms which preferential rates and secret concessions to shippers may take are legion, ranging all the way from the barefaced payment of cash to the mere granting of special facilities in promptness and dispatch. It can not be questioned that the interstate-commerce act has operated to eliminate practically the payment of rebates openly by check or by cash. Even in the most patent cases of this sort, however, it is almost impossible to detect and punish them, primarily because any disinterested informant can by no possibility have any personal knowledge of them. The act of 1887 itself, making such rebates or concessions a criminal offense, has compelled secrecy in all details. No railroad official dares inform against another for fear of inviting retaliation. Another obstacle to the payment of direct rebates exists in the publicity of accounts. The once prevalent practice of charging rebates to operating expenses can scarcely prevail when such accounts must be publicly filed.

Such secret personal discrimination as exists to-day assumes of necessity, therefore, more complex forms than the mere payment of cash. A few of the more common methods of personal discrimination may be mentioned. Goods which actually weigh 500 pounds may be accepted at a weight of only 400, full tariff rates upon this weight being paid. This is one form of underbilling. Another is by allowing a larger proportion to one line as its prorating division of a through rate than the original percentage, the excess being turned over to a shipper in order to secure his business. Or, again, rates may be manipulated by changing the destination in transit so as to reduce the rate. Thus, for example, the rate from Missouri River points to Chicago on grain for export is somewhat more than 3 cents lower per 100 pounds than on grain destined to Chicago for consumption there. It has been proven before the Interstate Commerce Commission that a large amount of grain from west of the Mississippi has been transported to Chicago on a basis of the through rate. In other words, it is billed for export, but unloaded on

the way. This amounts to a cut of 3 cents per 100 pounds. Goods, such as all-wool clothing, may be billed, by connivance with the freight agents, as cotton or part wool and part cotton, in which case the rate would be perhaps one class lower. This is a very frequent device and one which the railroads themselves, in many instances, do not dare to expose for fear of losing the shipment to a rival road. One shipper may enjoy a privilege of free storage, which is denied to another; or he may have his goods delivered at his warehouse without cost for drayage. Either of these advantages is practically equal to a rebate, which some other shipper may not enjoy. The denial of a privilege, such as that of milling in transit, to all but a single shipper may impose a serious discriminating burden upon all his competitors. This privilege involves the right to unload grain at an intermediate point for milling, shipment afterwards to the point of delivery being made at an agreed low through rate from the initial station. If one miller is compelled to pay two local rates instead of a joint through rate, the effect upon him is practically that of discrimination. It is unnecessary to illustrate farther; the forms are as various as the ingenuity of man is able to suggest.

PRESENT SITUATION.

It is the universal opinion both among shippers and in railroad circles that the general rate situation in 1901, so far as rebates and discriminations are concerned, is more satisfactory than at any time in the history of railroading in the United States. With very few exceptions the published rates seem to be observed on all kinds of business. As has already been stated, this commendable situation is due to a number of causes. Primarily it seems to be due to an adequate appreciation by the railroads themselves of the losses of revenue to which they have voluntarily subjected themselves and one another in the past. In the second place, it is undoubtedly due to the enormous volume of traffic incident to general prosperity, which has overtaxed the facilities of the railroads, and in some cases has led to a desire to evade new business rather than to seek it actively. In the third place, the consolidations and extension of community-of-interest ownership have contributed to the same end.

As indicative of this condition of affairs a few citations may be made from replies to a circular letter sent out by the Industrial Commission to railroad commissions throughout the country, as well as to a number of representative traffic officials who had not already expressed their opinion before the Commission in person. Inasmuch as the Southern States have been peculiarly the territory of rate cutting and discrimination, the evidence from that section is of especial interest. The secretary of the Railroad Commission of Georgia replies:

> In my opinion the practice of making secret preferential rates and of rate cutting is decidedly less prevalent at this time than ever before. Formerly in this section

there was considerable complaint in this respect, but within the last four or five years conditions have greatly improved, so that during the last year there has not been a single complaint bearing upon that question.

The secretary of the Railroad Commission of Arkansas replies:

There is not a great deal of rate cutting in this State at the present time. It is specially prohibited by the Commission law of this State on domestic traffic, and the Commission enforces that provision of the law by fixed and heavy penalties. Besides, the Commission's rate so materially reduces the rates that they have not the margin that they formerly had. We hear of no complaint of cut rates on interstate traffic. In fact, we do not believe it is practiced to any considerable extent in this State.

The following communication is from the Railroad Commission of Louisiana:

Rate cutting at present does not exist to the knowledge of this Commission. Before the Commission was organized rate cutting was frequent and had a disastrous effect upon commercial centers. * * * It is an undisputed fact that rate wars, discriminations, and undue preferences to persons or localities have disappeared since the organization of this Commission, except in rare instances, which, when discovered, are promptly dealt with.

In justice to the parties concerned it deserves to be mentioned that an extended investigation of traffic conditions in the Southern States by an expert of the Industrial Commission corroborates this opinion. A large measure of the improvement is due to the determined attitude which has been taken by the Southern Railway system since its inception. It is the universal testimony that this most important railroad in the Southern States has set an example in adherence to published rates which has had a most salutary effect upon all the smaller railroads.

These quotations are typical of replies received from all parts of the United States. The following statement from F. B. Clark, esq., general traffic manager of the Great Northern road, is also significant:

The rates that I am familiar with are the rates on the Great Northern road and on the roads in competition with the Great Northern between our eastern terminals to the Pacific coast and intermediate stations, and I am in a position to state to you most positively that they come nearer being actual tariff rates as published, between St. Paul, Duluth, Superior, and all points west, through to and including the Pacific coast, than I have ever known them to be. In fact, since the 1st of Janurary, 1901, no agent of this company has been allowed to quote anything less than tariff rates. There was a time in the fall of 1900 when the conditions were not as good, and some contracts were made which extended into the present year. Outside of this, as above stated, there has been no rate cutting by the officers and employees on the Great Northern system, and tariff rates prevail over the entire system. I might say that I believe that the rate condition in the Northwest as between the Northern Pacific and the Great Northern is in better shape than in any section of the country, and we expect that it will continue.

HISTORY OF RATE WARS AND DISCRIMINATIONS.

It should not be supposed, in virtue of the encouraging statement herein made, that this improvement has been of long duration. There

have been at various times since 1887 periods when the rate situation was highly satisfactory. These have alternated with periods of abject demoralization, characterized by rate wars almost as severe as at any time in our history. It may not be without interest to mention a few of the more important of these contests between railroads, which always involve personal discrimination of the most iniquitous form. Immediately subsequent to the Act to regulate commerce, the rate situation was greatly improved, but harmonious relations were rudely shaken by the rate war in 1888 between the Chicago and Grand Trunk railway and the Pennsylvania and New York Central systems, with reference to the rates upon dressed beef and similar traffic. The prosperity of the early nineties resulted in a considerable improvement in this respect. To this succeeded in 1893 a most serious and widespread rate war which involved the entire trunk-line territory. Grain rates, for instance, from Chicago to New York were openly reduced from 25 cents to 15 cents. This is 10 cents, for midwinter rates, below the usual midsummer rate by rail. Two peculiarities of this rate war deserve mention. First, that every concession was publicly made—that is to say, the cut rates were filed with the Interstate Commerce Commission; and, secondly, owing to the percentage-basis system to intermediate points,[1] the rate war on Chicago-New York rates automatically induced a rate war to every intermediate point in Central Traffic Association territory.

In the same year (1893) a bitter war on transcontinental business broke out. During this conflict freight was carried from New York to San Francisco as low as 30 cents per 100 pounds. The following year (1894) witnessed entire demoralization in freight rates throughout the Southern States. Every carrier in this section was involved. During June and July rates were cut in some instances as much as two-thirds. Thus, the rate from New York to Atlanta on first-class freight was reduced to 40 cents from $1.14 per 100 pounds.

The years 1894 and 1895, for the country as a whole, were exceedingly unfortunate. This was a period of acute depression and the rivalry for business at any cost was undoubtedly the cause. Wars in transcontinental rates became almost chronic from 1894 to 1896. The latter year witnessed a return to sanity, although grain rates to Missouri River points were badly demoralized, as a special investigation by the Interstate Commerce Commission showed. This was the time when the Joint Traffic and Trans-Missouri associations were in force, and when the prospects of legalization of pooling by Congress were bright. Rates seem to have been observed with more than usual faithfulness throughout the country. The only exception was another break for a short time in the Southern States. The Trans-Missouri decision by the United States Supreme Court in 1897, declaring all

[1] Described on p. 371, infra.

these traffic associations illegal, once more precipitated the most unsatisfactory conditions. These were accentuated by the budding prosperity of the following year.

The year 1898, as a result of the resumption of prosperity and the frantic desire of the carriers to participate in it, was characterized by extreme disorganization again. The Interstate Commerce Commission in its report for that year states that—

> From investigations conducted during the past year, as well as from information which is perfectly convincing, * * * a large part of the business at the present time is transacted upon illegal rates. Indeed, so general has this rule become that in certain quarters the exaction of the published rate is the exception.

The situation may be described also by a competent witness before the Industrial Commission,[1] who states:

> There were fewer rates maintained in 1898 than at any time within my knowledge of the railroad business, and I have been in the railroad business for twenty-eight years.

The Interstate Commerce Commission at this point intervened by the proffer of its good offices. Conferences were held with the presidents and executive officers of the principal railroads. This action marked a decided change in the attitude of the Commission toward the carriers. Realizing its absolute inability under the law either to prevent or correct the existing abuses, it wisely endeavored to arouse the railroads themselves to the enormity of the evils then existing. The result fully justified all expectations. The year 1899 witnessed an almost complete restoration of published rates, business continuing to expand in volume until there was ample for all the railroads to handle. This condition lasted for some time. During 1900 rate cutting again developed, upon a large scale, in west-bound business. The great excess of east-bound shipments and the demand for return lading at any price was undoubtedly the cause. This condition lasted throughout the fall of 1900.

May of 1901 again witnessed rate cutting as between the trunk lines, grain being hauled as low as 11 cents per 100 pounds from Chicago to New York. This seems to have been due to competition between the Lake lines and the railroads. It is interesting to observe that this condition was subsequent to the nascent development of the community of interest idea. During 1901 a passenger-rate war from the Missouri River to California points also threatened. Even in July, 1901, from the traffic managers of important roads replies like the following have been made to inquiries of the Industrial Commission:

> There has been a very general observance of tariff rates in the territory south of the Ohio and east of the Mississippi rivers during the past four months. Rates on traffic moving between southern points and eastern cities and points in the central traffic territory are not being strictly maintained. Deviation from tariff rates prevails among the lines north of the Ohio River.

[1] Reports Industrial Commission, Vol. IV, p. 194.

This is corroborated by information from the traffic manager of one of the best roads in the West:

It is needless to say that these rates in some cases are shaded by some of the lines giving concessions to shippers. I understand that as much as 40 cents a ton is given away by the lines between the Ohio River and Chicago on rates from the South.

From another part of the country comes the testimony, likewise from a traffic manager of one of the most important railroads:

It is a well-known fact that the freight rates for the last few weeks between Chicago and what is known as the Missouri River points, and points in the Southwest, have been very much demoralized, but the railroads have gotten together during the last two weeks and made some agreements and promises to each other to restore these rates to the tariff basis taking effect July 15.

Investigation along this line showed that a rate war between all the Western lines was threatened by independent action taken by the Atchison, Topeka and Santa Fe road. This company, independent of all the consolidations which have been described, and persuaded that its competitors were not acting in good faith, filed a tariff of rates between Chicago and the Missouri River, which scaled the rate on first-class goods, for instance, from 80 cents down to 50. At present this war of rates seems to have been averted by a new agreement between the roads concerned; but a subsequent press dispatch of August 1 announces that the agreement made was violated within forty-eight hours after its adoption.[1] The principal rate cutting is being done, according to this report, by some of the strongest lines. As late as November, 1901, comes the positive admission of traffic managers of the trunk lines to the seaboard, in hearings before the Interstate Commerce Commission relative to export rates upon flour and grain, that export grain rates from Chicago had been cut to 11 cents from a published tariff of 13½ cents. Whether this cut rate was granted without discrimination between individual shippers was not made clear. Nathan Guilford, traffic manager of the New York Central, testified that published rates had not been maintained on grain for export from June to September.

PERSONAL DISCRIMINATION AND DISCRIMINATION BETWEEN LOCALITIES.

This summary shows how variable conditions have been under the interstate-commerce act and that a drastic remedy is needed in order to correct this evil of rate cutting and discrimination. To be sure, these cut rates at the present time are often published, and in most instances filed. Many of them involve rather the discrimination between competing cities and markets than between competing shippers. To understand the significance of this, the difference between personal discrimination and discrimination as to localities demands description. Personal discrimination involves an actual cut under the published rate.

[1] Compare the evidence on p. 285, *supra*.

Discrimination as between cities or places is rather in the nature of a maladjustment of rates per se. Personal discrimination is more serious in its immediate effects, but the discrimination as between cities may operate to cause injustice to a larger number of persons. While it is probable that most of the rate cutting is of the latter sort, nevertheless the existence of demoralized rates of any kind always paves the way to the granting of personal discriminations. To abolish these was, as has been said, one of the primary objects of the act of 1887 to regulate commerce.

RAILROAD COMPETITION.

In order to understand the difficulty incident to the making and enforcement of just and reasonable railroad rates, the highly complicated character of railroad competition should be thoroughly understood. A great deal of discussion relative to railroad competition seems to be based upon the assumption that it consists, in the main, of the competition of lines more or less parallel or else operating under substantially equal conditions. As a matter of fact, competition in freight rates is in large measure far more complex. Such ideally simple conditions rarely exist. We may distinguish four distinct types of railroad competition: the first, which we may call direct competition of parallel lines; second, indirect competition of widely separated routes; third, the competition between cities; and finally the competition between markets which may be within the same country or in distant parts of the world.

COMPETITION OF PARALLEL LINES.

Direct competition between parallel lines may be best exemplified by the case of the trunk roads between New York and Chicago. It has arisen in the past in the cases where parallel lines, such as the West Shore and the Nickel Plate, were built for the express purpose of engendering competition. Such is usually the nature of competition between canals or rivers and waterways. Thus we have the competition between the Erie Canal and the New York Central, or the Illinois Central to New Orleans and the Mississippi River. Such simple competition as this, where confined to the railroads alone, almost inevitably leads to one of two results: The roads may remain independent, preventing ruinous rate wars by pooling, or else, by reason of long-continued cutthroat competition, the bankrupt ones are bought up and consolidated with the solvent.

INDIRECT COMPETITION BY CIRCUITOUS ROUTES.

Indirect competition by a combination of different carriers connecting to form a circuitous through route is no less common than the preceding form. The best example of this is seen in the rivalry

existing between all of the trunk lines acting jointly through Atlantic ports to Europe and the various carriers operating to the same destination through the Gulf ports. Reversing the situation, Nashville, Tenn., may be reached either directly from New York over the trunk lines or by way of Savannah or a Gulf port, thence by railroad up to Nashville. The recent leading cases adjudicated by the United States Supreme Court involving rates to the rival cities of Chattanooga and Nashville turned, in fact, upon the existence of this competition. Another case in point illustrating the difference between direct and indirect competition of carriers is that of the competitive routes between Cincinnati and Atlanta. It appears that there are seven lines operating directly between these two points, in competition, of course, with one another; but in addition to these there are 12 others, which are so-called "potential" carriers. These latter are always in the field, alert for business whenever conditions make it possible for them to engage in it.

One of the most striking facts about the railroad industry is the extreme fluidity of freight, if we may coin a phrase. Once loaded upon a car, it appears to make very little difference whether the distance hauled be 500 or 1,500 miles. Twenty-five years ago there were 20 competitive routes between St. Louis and Atlanta, varying in length from 526 to 1,855 miles respectively. Even between Boston and Chicago, competition by way of Newport News over a line more than 1,600 miles long, is effective, with the direct route scarcely more than 1,000 miles in length. Freight transported from New York to Denver may be carried more than 3,100 miles via New Orleans, as against 1,940 miles direct, one route being 62 per cent longer than the other. Fruit from southern California may be successfully transported under competitive rates by way of Portland, Oreg., and the Great Northern Railway. This same fruit may work its way down toward the southern part of the United States after going far more than 1,000 miles laterally before it begins its journey east. Instances of this sort may be multiplied indefinitely. A result of this indirect competition is that cities intermediate between producing centers often derive a great advantage. This is one of the reasons for the prosperity of Kansas City, due to its strategic position. Its sugar may come from New Orleans or the Pacific coast; its cotton goods from New England or from the South; its European importations by New Orleans or New York; and its canned goods either by New Orleans or by Baltimore. Such indirect competition by circuitous routes always affords the possibility of bidding off one rival against another and of securing all the advantage incident thereto. The essential difference between competition of this sort and that which has been called direct, is that in this instance consolidation of rival roads or routes is impossible unless practically all the transportation systems of the United States be unified under a single control.

COMPETITION OF CITIES.

Direct competition between cities is a distinct factor in railroad competition. Hardly a railroad can be named whose interests are not more or less closely identified with those of a particular city. Bearing in mind the rivalry between such centers as, for example, Pittsburg and Buffalo, Omaha and Kansas City, Atlanta and Birmingham, etc., it will be seen how one form of rivalry may stimulate another. Each road is perhaps endeavoring to foster industry or business at its favored center. As tersely put by a witness before the Industrial Commission:

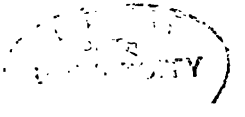
> It is a continual struggle between the line from Kansas City to St. Louis with no interest in Chicago, and the line from Kansas City to Chicago with no interest in St. Louis.

One of the important traffic results to be expected from the recent consolidations is the readjustment of such favoritism existing between railroads and cities.

COMPETITION OF MARKETS.

The fourth type of competition, and one which in a way underlies all of the others, may be termed the competition of markets. It represents the attempt of rival producers, or of rival jobbers or distributing agents of different sections, to extend their influence throughout a consuming territory. The backbone of the railroad adjustment throughout the United States lies in the rivalry between the Atlantic or Eastern trade centers and the Western cities for the remunerative trade of the Southern States. The Texas market is competed for by all the distributive centers between Kansas City and Boston. The fruit growers of California and of Florida are respectively competing for markets throughout the United States, and particularly in the Northeast. Such competition recognizes no national bounds. Copper from Montana must be transported at rates which will permit of meeting the price on Chile bars in the Liverpool market. Our entire grain and cotton crops must be transported at rates which will enable them to hold their precedence in Europe. The cotton mills in New England and in the South must have their output carried to China under conditions which will enable them to meet the price made by the British manufacturer.

Such competition as this between the markets of the world underlies the entire question of export and import rates versus those imposed upon goods for domestic consumption. This topic will be discussed later. Quoting from a recognized authority, the whole question of railroad-rate adjustment is based upon "the competition of various producing and manufacturing points, each striving to extend its field of sales throughout the whole trade district accessible to it. It is primarily a question of alternative markets, not of alternative rates."



NATURE AND EFFECTS OF RAILROAD COMPETITION.

Competition as the life of trade has been extolled by all economic writers. Its advantages are being eulogized particularly in this period of tendency toward consolidation. It has, however, long been recognized both in economic writing and in law, that competition between railroads is in many respects different in character from competition in other forms of industry. Several of these points of difference may be mentioned in this connection. They almost all turn upon the essential fact, already mentioned, that a large proportion of railroad expenditures are entirely independent of the amount of business done. The first of these peculiarities of railroad competition is that it does not lead to the survival of the fittest, as a rule. The poorest equipped, the most circuitous, and most nearly insolvent road is often able to dictate terms to the standard and most direct trunk line. This has been exemplified time and again in the history of rate wars the world over. The insolvent road having repudiated its fixed charges, has nothing to lose by carrying business at any figure which will pay the mere cost of haulage. The indirect line, having no business at the outset, has nothing to lose. The Canadian Pacific, for example, was perhaps originally built without any expectation of being able to participate in San Francisco business. Any little contribution, therefore, to fixed expenses is welcome, even at an infinitesimal profit; at which rate, applied to all their traffic, the direct lines would speedily become bankrupt. The inevitable result in all such cases is that the greatest damage in competition is inflicted upon the strongest competitor. This it is which forces it oftentimes to subsidize or purchase its weaker rivals. A corollary to the peculiarity of railroad competition above mentioned is that it almost always involves discrimination. Competition in industry usually induces equality of prices. Among railroads, however, the rival road, either by indirection or bankruptcy, is the one which makes and takes secret concessions in rates in a wild endeavor to secure business at anything above the mere cost of haulage.

Another peculiarity of railroad competition which distinguishes it from competition in other branches of industry is that there is no such thing as abandonment of the field. This is tersely expressed in the quotation from Morawetz in his treatise upon corporation law:

> It should be observed that competition among railroad companies has not the same safeguard as competition in trade. Persons will ordinarily do business only when they see a fair chance of profit, and if press of competition renders a particular trade unprofitable, those engaged in that trade will suspend or reduce their operations, and apply their capital or labor to other uses until a reasonable margin of profit is reached. But the capital invested in the construction of a railroad can not be withdrawn when competition renders the operation of the road unprofitable. A railroad is of no use except for railroad purposes, and if the operation of the road were stopped, the capital invested in its construction would be wholly lost. Hence it is for the interest

of the railroad company to operate its road, though the earnings are barely sufficient to pay the operating expenses. The ownership of the road may pass from the shareholders to the bondholders, and be of no profit to the latter, but the struggle for traffic will continue so long as the means of paying operating expenses can be raised. Unrestricted competition will thus render the competitive traffic wholly unremunerative, and will cause the ultimate bankruptcy of the companies unless the operation of their traffic which is not the subject of competition can be made to bear the entire burden of the interest and fixed charges.

So profoundly modified are all the conditions of railroad competition, in contrast with those in industry, that it has frequently been asserted that a railroad is essentially a monopoly in any case. So far as local business as distinct from through traffic is concerned, this is undoubtedly true. It is also true in respect of traffic in which competition is direct enough to permit of pooling or a division of the business upon satisfactory terms. Every tendency toward consolidation, and especially the recent movement, taking the form of division of the field, undoubtedly adds force to this contention that railroad charges are essentially monopolistic in character. To attempt to perpetuate competition, however, in an industry in which, as has been almost universally recognized, equal competition is the exception and not the rule, must be the part of folly. The only alternative is to recognize the conditions as they exist. If the railroad business is a monopoly, its charges being determined in accordance with the principles that apply to that form of industrial organization, the necessity for adequate supervision and control in the public interest becomes all the more patent.

NECESSITY AND DIFFICULTIES OF REGULATION.

Such control should, however, recognize the fact that the conditions are highly complex, and that no simple and general rules can be made to govern in all instances. The very complexity of the problem emphasizes the necessity for intelligent direction. To foster salutary competition between trade centers, for instance, and to eliminate at the same time the grasping desire of unqualified competitors to participate in business which properly belongs to others, should be one of the ends contemplated by such control. Nevertheless it should be recognized that the interrelation of roads by all possible routes between producing and consuming centers is so delicately adjusted that to interfere with one road is always liable to disturb the balance of power throughout the whole. The delicacy of the rate adjustment which has resulted from years of conflict, discussion, and compromise between the railroads constitutes one of the strongest reasons for supervision by some competent authority. Abuses or maladjustments of rates, which the railroads can not remedy themselves, make supervision by some disinterested party all the more necessary.

Oftentimes traffic managers are not free to grant reductions of freight rates, which they themselves acknowledge to be just, by reason of the opposition of competing lines. In most parts of the country the rates to important points are delicately adjusted as between all of the lines which directly or indirectly serve a particular place. The consent of every one of these interests is necessary in order to insure stability of rates; and no single road is free to act independently, under penalty of a rate war which may not only disastrously affect its relations with connecting lines, but also result in an active invasion of its own territory. Thus, for example, in the Southern States, let us suppose that the Southern Railway is willing to concede as a measure of justice a reduction of rates on cotton from Mississippi River points to the cotton mills in North and South Carolina. The moment that it offers to do this, lines competing with it on traffic to New England, or to the seaports for export business, threaten wholesale reductions which would seriously affect the general revenues of the Southern Railway as a system.

On the other hand, in this same territory, let us suppose that the railroads operating south from Cincinnati and Louisville desire to reduce rates on manufactured products from the Central West, as a measure of justice to shippers. These are the very lines, be it observed, which in the former instance prevented the reduction of the cotton rates on the Southern Railway by threats to meet any such reduction with a cut in their rates on cotton which goes North through the Ohio gateways. The moment they suggest a reduction of their rates on manufactures going South, the Southern Railway, whose major interests have been until recently along the Eastern seaboard to Boston, New York, and Philadelphia, threatens a rate war to protect the manufacturers who ship over its lines. Imagine this situation extended until the rates practically to every important point are maintained, not because of their inherent reasonableness, and not even because the railroads independently acknowledge them to be just, but simply and solely because any slight disturbance of this house of cards might lead to the downfall and destruction of the entire edifice.

Let us take another example. All of the roads and steamships engaged in transcontinental business from the Mississippi River west have finally agreed upon a certain adjustment of rates, none of them, perhaps, conceded to be fair in and of itself, but accepted, nevertheless, as a compromise between the various interests involved. A case is now before the Interstate Commerce Commission involving the rates from Chicago, as compared with those from the Atlantic seaboard, to the Pacific coast. Under present conditions Chicago and all points east of the Mississippi, from Maine to Florida, enjoy precisely the same rate to the Pacific coast. Chicago now comes forward and claims the right to a graded rate; that is to say, that, being 1,200

miles nearer San Francisco on the basis of distance, it ought to have proportionately lower rates. Apparently some of the transcontinental roads, such as the Great Northern, have for some time been willing to concede this point. They can not, however, take any action without first obtaining the consent of every other road and steamship company with which they have to compete. Without pretending to decide this intricate question, as to whether rates to Chicago are reasonable, it must be apparent that there is no such thing as independence of action on behalf of any single carrier. This fact makes it exceedingly easy for one road to play a dog-in-the-manger part. It often subjects the shipper to an extortionate policy not dictated by the road over which he ships, as a matter of fact, but by a road which operates perhaps a thousand or more miles away.

RAILROAD DISCRIMINATION AND INDUSTRIAL COMBINATION.

It is incontestable that many of the great industrial combinations had their origin in railroad discrimination. This has been emphasized many times in the history of the Standard Oil Company and of the great monopolies dealing in live stock, dressed beef, and other products. These facts are matters of past history. It is important to inquire, however, whether the more recent industrial combinations are able to command the same advantages over their competitors in the matter of railroad transportation as were enjoyed by the earlier trusts. Information upon this point is exceedingly difficult to obtain. It involves proof of criminal conduct in the giving or taking of rebates or concessions, and is open to all the difficulties of detection already described. If such concessions exist at the present time they seem to be made rather by manipulation of the freight tariffs and classifications than by direct granting of special rates or rebates.

The assertion has been made before the Industrial Commission that the recent advances of freight rates of 1900 have touched more lightly upon the commodities handled by some of the great combinations. Thus, for instance, in the case of coffee a different classification prevails for the green and roasted product. The first of these was apparently advanced by changes in the Official Classification and the other not. It has been asserted that the effect of this has been to prevent competition on the part of coffee roasters at local centers. The adjustment of tariffs in order to favor the Standard Oil Company has been asserted before the Industrial Commission by a member of the Interstate Commerce Commission.[1] Thus it is claimed that reductions of freight rates on oil to shippers by tank cars have been prevented, in

[1] See testimony of Messrs. Westgate, Emery, and Rice, Vol. I, pp. 374–399, 667, 710, 731, and of Mr. Prouty, Vol. IV, p. 149. For the opposite view, see testimony of Messrs. Archbold and Page, Vol. I, pp. 516, 556–559, 768, 775–777.

face of the general fall upon all other classes of commodities. It is asserted by the same witness that the rates upon oil shipped in this way by companies controlling great pipe lines are so adjusted as to be prohibitive to competitors at many places. New Haven territory, for example, is specified as practically closed to all competitors who have not the facilities which the peculiar adjustment of rates and classification affords to the Standard Oil Company. The same thing is said to be true at New Orleans.

PRIVATE CAR SHIPMENTS.

Another industrial combination which seems to have been able to dictate terms to the railroads is that of the live-stock and dressed-beef firms at Chicago, Kansas City, and other points. The situation is aptly described by Hon. Augustus Schoonmaker, then a member of the Interstate Commerce Commission, as follows:

Investigations made by the Interstate Commerce Commission at different times have disclosed to some extent the very large sums received by shippers as mileage for the use of such cars.

By an investigation made in 1889 it appeared that on a single line of road between Chicago and an interior Eastern point—a distance of 470 miles—refrigerator cars owned by three shipping firms made in nine months, from August 1, 1888, to May 1, 1889, 7,428,406 miles, and earned for mileage $72,945.97, being about $8,112 a month, or substantially at the rate of $100,000 a year.

By another investigation, made in 1890, it appeared that private stock cars to the number of 250 had been used upon a line made up of two connecting roads between Chicago and New York, beginning with 150 cars on September 1, 1880, increased 30 more a month later, 20 more another month later, and reaching the total of 250 in June, 1890; that the cars altogether had cost $156,500, and had earned for mileage in two years, from September 1, 1888, to September 1, 1890, $205,582.68; that the entire expense to be deducted during that period for car repairs and salaries for their management was $34,050.48, leaving net revenue to the amount of $171,532.20, being an excess of $15,032 above the whole cost of the cars. The cars were therefore paid for and a margin besides in two years, and thereafter, under the same management and with a corresponding use of the cars, an income of upward of $100,000 a year was assured on an investment fully repaid, or, in effect, on no investment whatever.

* * * * * * *

A single railroad company, as shown by its official report for 1889, paid car mileage to 65 different companies and firms owning cars, of which 54 were shippers and the remaining 11 fast-freight organizations.

	1886.	1893.
Total number of all descriptions	1,000	5,600
Proportion at—	*Per cent.*	*Per cent.*
First class, 75 cents	32	22
Second class, 65 cents	24	12
Third class, 50 cents	11	19
	67	53
Fourth class, 36 cents	31	19
Fifth class, 30 cents	2	23
Sixth class, 25 cents	0	5
	33	47

(Rates used are from New York to Chicago.)

More explicitly stated, in 1886, 67 per cent, or 670, of the 1,000 articles were charged 50 cents per hundred and higher; in 1893 the actual number is shown to be higher, although the proportion at the rates of the higher classes is very much less. The number in 1886 charged a rate of 35 cents per hundred and lower was only 330, or 33 per cent; in 1893 it is seen that this number is increased to 2,630, or 47 per cent. Another form of comparison shows the average rate of all descriptions in 1886 as 63 cents, against 48 cents in 1893, or a reduction of 15 cents per hundred pounds.—*Reprinted in McCain, Compendium of Transportation Theories, page 193.*

The origin of this system of private cars seems to have been partly in the failure or inability of the carriers to provide adequate facilities. Whether conditions have so far changed as to justify the continuance of the practices so generally at present may be open to question.

A number of railroad witnesses, including several railroad presidents, have testified to the iniquitous practices which prevail in respect of the shipment of goods by private cars. It is difficult to determine whether conditions are improving or not in this respect. While the so-called fast-freight lines still operating over some of the trunk lines are in existence, they seem to have assumed simply the nature of through routes. The Merchants' Despatch Transportation Company, the Blue and White lines, etc., seem to be rather trade-marks for certain service than independent corporations enjoying particular rights and privileges. The number of cars controlled by them does not seem to be on the increase. Thus, 44,000 of them in 1894 have increased to only 45,000 in 1899, according to the official statistics. On the other hand, the private cars owned by refrigerator companies, either for the transportation of dressed beef to the seaboard or of fruit from California to the East, seem to be on the increase. The system seems to be one of payment of mileage by the railroads for the use of the cars. In some cases as much as three-fourths of a cent a mile is paid. It often amounts to 6 mills per mile, which is the sum which railroads pay one another for the use of cars. Under special conditions there seems to be justification for the existence of this system of private ownership of cars, especially where great cleanliness is required, where the cars can not be used for return lading for any other sort of traffic, etc.; but the iniquity of the system lies in the exaction from the railroads of a higher mileage than the service is worth. This tax or rebate operates, of course, to injure both the roads and rival concerns. As an illustration of the power which some of these monopolies possess to dictate terms to the railroads, the testimony of such men as President Callaway, of the New York Central, before the Industrial Commission was to the effect that most roads would gladly abolish the system if it were possible, but that so long as certain competitors granted the privilege it must be accorded by all. In respect of the California fruit cars, the railroads do not seem to feel the burden, and their representatives uphold the practice. On the other hand, certain events of 1901, such as the apparent absorption of these fruit-

car companies by the Armour interests of Chicago, thus constituting an absolute monopoly of the refrigerator business, may arouse more opposition in due time. Every tendency toward consolidation among carriers renders them more independent of these outside monopolies. Judging from evidence before the Industrial Commission, the legalization of pooling, with the incidental abolition of competition for business, would tend to free the railroads from this incubus. One of the most encouraging signs of the times is the decided stand taken by the carriers against the continuance of the practices which they themselves originated twenty years ago.

THE UNITED STATES STEEL CORPORATION AND THE RAILROADS.

Another indication that the railroads propose to engage in an endeavor to cease favoring the industrial combinations is found in the developments in Pennsylvania. In this State the most important railway system in the United States—the Pennsylvania Railroad—and the most powerful industrial combination—the United States Steel Corporation—are located. Prior to the formation of the United States Steel Corporation an increasing amount of friction between the Carnegie Steel Company and the Pennsylvania Railroad was apparent. Because of the refusal of the Pennsylvania road to grant certain concessions demanded by the Carnegie Company on rates to the seaboard the construction of a new and independent outlet to Philadelphia was threatened. The outcome was a considerable concession in the rates upon steel, reference to which has already been made. The converse of this relationship is shown by the relations which the railroads as purchasers bear to the steel companies as manufacturers. The maintenance of very high prices upon steel rails and other iron and steel products has, for two years, entailed an enormous expenditure by the railroads for supplies. The formation of the United States Steel Corporation has of course tended, more than ever, to monopolize the manufacture of this staple product. In view of this fact the recent purchase of a large interest in the Pennsylvania Steel Company by the Pennsylvania Railroad is significant. It was announced on the 12th of June, 1901, that a minority holding of stock by the railroad in this great company had been increased to an investment amounting to actual control. The terms of this transaction have not yet been made public, but an apparent justification for it would seem to be the endeavor of the railroad to render itself independent of the steel corporation in the matter of the purchase of steel rails and other supplies.

STABLE AND EQUAL RATES VERSUS LOW RATES.

Representatives of commercial organizations and shippers in general have universally testified that stable and equal rates are much more to be desired than a lower range of rates as a whole, open to the possibility of fluctuation or discrimination. So long as all shippers pay the same amount for equal service, and so long as rates are steady, so that contracts may be confidently based upon them, the absolute amount paid, be it high or low, is of relatively small importance to the shipper, for it is at once reflected in the price which is levied upon the consumer. The consumer, on the other hand, does not benefit by fluctuating rates, which vary greatly as between competitors, by means of rebates and secret concessions, because the price which he pays for the goods consumed is made usually by the dealer who operates under the greatest disadvantage; that is to say, cuts in freight rates tend to yield inordinate profits to the middleman who receives them, rather than to lower the price of those goods to the public as a whole. There is no ground, apparently, for complaint in the United States that railroad rates, in general, are unreasonably high. It has been proved time and again that they average lower per mile than for any other country in the world. The burden of complaint has always been, not that they were unreasonably high, but that they bore unequally upon different shippers. This is true as between persons. It also holds good between places. Thus, for example, Montgomery, Ala., which enjoys peculiar advantages in the adjustment of freight rates by reason of water competition by river, complains bitterly, nevertheless, because Mobile, a competitive distributing center, enjoys still lower rates. It is not alleged that the rates into Montgomery are too high, but that the rates into Mobile, a competitive center, are too low. The relativity of rates to different places, as well as to different persons, is the ground of complaint.

It has frequently been asserted before the Industrial Commission that unjust discrimination between persons and places is being gradually eliminated by reason of the fact that rates have been brought so low that there is no longer a possible margin for discrimination. If this assertion be true, the development of railroad competition, which has undoubtedly been the primary cause in the general decline of freight rates, is bound at some time to eliminate entirely personal preferences and discrimination. In controversion of this comfortable theory, however, it may be said that personal discrimination is always most rife at times when freight rates are the lowest, as, for instance, in the case of a rate war. It is surprising how deeply rates may be cut without at the same time removing the incentive to the railroads to compete for the traffic. Even in fairly normal times concessions from

published tariffs of 40 per cent, and in some cases as high as 60 per cent, are made on special commodities, presumably leaving the railroads some margin above the mere cost of transportation thereafter. This being the case, it does not appear that until rates reach a very much lower level than they have yet attained will there be hope of eliminating such fluctuations. Personal discrimination apparently, judged from such facts as these, can only be abolished by removal of the cause which has given rise to them—namely, unreasonable and unreasoning competition.

FREIGHT RATES AND PRICES.

The Industrial Commission has collated a large amount of testimony concerning the relation which exists between the price of products, either to the producer or the consumer, and freight rates exacted by the railroads. On the one hand, it has been contended that prices are made by commercial conditions, irrespective of the action of the carriers; that, in other words, an increase of freight rates to the farmer, let us say, does not operate to reduce the price of his product or to increase the cost to the consumer. The opposite of this contention has been frequently represented; namely, that any increase of freight rates does, and must of necessity, constitute a large added tax upon the consumer; so that, as a result, the determination of the reasonableness of railroad rates becomes a question of interest alike to the shipper and to the public. One point is beyond peradventure true, an increase of freight rates must come out of somebody. The excess taken either reduces the price to the producer, increases the price to the consumer, or reduces the profits of the middleman. The whole matter seems to turn upon the question whether the change in the freight rate be general, applying to all the carriers of the country at once, or whether it be local and special in character. The case is analogous to that of the imposition of a special as against a general tax. The distinction between conditions applying to commodities whose price is made in a foreign market, as distinct from a domestic one, must also be kept clear.

The price of grain, which is made at Chicago, results from an equilibration of demand and supply. Farmers from all parts of the West must sell their products to middlemen, who have in view reselling that product at this market price in order to turn a small profit for themselves thereby. If a particular road, therefore, arbitrarily increases its freight rates, it would seem clear that the farmers throughout the section of country affected must suffer to an amount equal to the increase of the freight rate made. They, in other words, are obliged to put their product upon the Chicago market in competition

with farmers on all the other railroads leading to that center. The balance of rates has supposedly been effected after long experience, in order to equalize, so far as may be, the local conditions which exist. An increase of freight rates in such a case is precisely analogous to the imposition of a special local tax; and variations of freight rates sectionally may stimulate or depress business, affect profits, and by so doing change values. The aggregate change of property valuations, representing, as always, the capitalization of net return, may consequently, by reason of a small change in freight rates, become exceedingly great. If, on the other hand, the change of freight rates be universal, subjecting all carriers to the same conditions, it is difficult to see how the price of the product to the farmer can be appreciably changed, except in the case that the market price at Chicago so far dominates the world's market that an increase of price at Chicago, we will say, of one cent a bushel, operates to increase the price of the product at Liverpool by an equal amount. If the price at Chicago be, however, determined locally, with an eye single to the equilibrium of domestic demand and supply, it would appear as if the effect of such an increase of freight rates would be to add the freight rate to the price which the consumer must pay. What more probably happens, in the majority of cases, is that the loss is divided between the two—the producer and consumer. In any event, it is not of particular importance to trace the exact incidence of such an increase. The public interest is involved as much in the increase of price to the consumer as in a reduction of profits to the producer. Only in the event above mentioned—that the Chicago market controls the price for the world's product—is it to be expected that an appreciable part of the burden of an increase of rates may be shifted upon a public other than that of the United States.

IMPORT AND EXPORT RATES.

IMPORT RATES.

The question involved in the so-called import and export cases is that of the reasonableness of charging lower rates on goods originally shipped from or destined to domestic points, than are charged for similar goods, over the same lines and for the same distances, when brought from or destined to foreign countries. Thus, for instance, in the case of cotton cloth shipped by way of Pacific ports to the Orient, the practice is not uncommon of charging a less rate to San Francisco for the transportation of goods ultimately destined for export than is charged on similar goods which are to be unloaded for consumption at San Francisco or other California points. Or, reversing the case, this question touches the reasonableness of transporting goods from New

York to Chicago at a lower rate, if they have been brought in from Europe, than is charged for similar service in the case of goods that have originated at or near New York. Cases of this description have become increasingly frequent during the last ten years. The first and most important one, upon which both the Interstate Commerce Commission and the United States Supreme Court have passed, originated in proceedings before the Interstate Commerce Commission, brought by the New York Board of Trade of Transportation against the Pennsylvania and other railroad companies. The case practically raised the general question whether, in the carriage of goods from American seaports, carriers subject to the act could lawfully charge less for the transportation of imported than of domestic traffic of like kind to the same destination. The Commission, after careful examination, held that such differences in rates constituted discrimination as against the domestic shipper. According to its view, the circumstances and conditions pertaining to the carriage of freight from a foreign port to the United States could not be considered as creating the dissimilarity of conditions which alone would justify a different rate for like service in the two cases. The Commission held that—

> One paramount purpose of the act to regulate commerce, manifest in all its conditions, is to give to all dealers and shippers the same rates for similar services rendered by the carrier in transporting similar freight over its line. Now, it is apparent from the evidence in this case that many American manufacturers, dealers, and localities, in almost every line of manufacture and business, are the competitors of foreign manufacturers, dealers, and localities for supplying the wants of American consumers at interior places in the United States, and that under domestic bills of lading they seek to require from American carriers like service as their foreign competitors. * * * The act to regulate commerce secures them this right. To deprive them of it by any course of transportation business or device is to violate the statute.

The Commission thereupon ordered the carriers to cease and desist from making such discrimination. This order, while obeyed by a number of carriers, was disregarded by the Texas and Pacific Railway, which operated an import line from New Orleans to San Francisco. Upon application by the Commission this case was carried to the Supreme Court of the United States for final adjudication. The Supreme Court decided that the interpretation of the law by the Commission was defective, although three members of the court, including the Chief Justice, dissented from this opinion. As an illustration of the discrimination which existed in this case it appeared that the domestic rate on books, buttons, carpets, etc., from New Orleans to San Francisco was $2.88 per 100 pounds, while the total through charge on the same articles from Liverpool to San Francisco was only $1.07. The Supreme Court distinctly refrained from an opinion as to the reasonableness of these rates, and contented itself with passing upon the propriety of any difference in rates whatever. It held that the contention of the railroads was sound, namely, that all circumstances and con-

ditions, whether within the United States or having regard for ocean rates and foreign competitive conditions, must be considered. In other words, they recognized the validity of the claim of the railroads that this import traffic must be taken at an extremely low rate if at all, since otherwise the goods would go by water around Cape Horn, or by another route. On the basis of such reasoning it would appear that any contribution from low import rates to the fixed charges of the railroad would enable that road to transport its domestic traffic at a lower rate than it otherwise might. What, however, the majority of the court did not add, although it was developed by the dissenting justices, was the fact that these conditions might exclude domestic purchasers entirely from certain markets, giving them over to importers who could control the market by reason of the low rates accorded. Since this decision in 1896 the railroads have still further developed this system of discrimination. The only safeguard for the domestic producer must lie, obviously, in some decision by a competent tribunal as to the amount of such differences which may reasonably exist. The Supreme Court has upheld their validity as a system, but it still remains for the amount of such difference which may be deemed reasonable to be determined. In case of a restoration of the powers of the Interstate Commerce Commission in the matter of rate making, this would undoubtedly be one of the first cases which it would be called upon to consider.

EXPORT RATES.

Identical in principle with the above case, although presenting reversed conditions, are the so-called export rate cases. These have to do mainly with the rates charged on products for domestic consumption as against like products for export. As an illustration of the extent of such differences, it has been clearly shown before the Industrial Commission that at times the freight rate on wheat from Kansas City to Galveston was 27 cents per 100 pounds if for domestic consumption, while the proportion of an export rate for a similar service was 10 cents. The rate on wheat from the Mississippi River to New York for domestic consumption was at times 20 or 21 cents per 100 pounds, while for the same service when the goods were to be exported the rate would be 13 cents per 100 pounds. This system of stimulating foreign business by discriminatingly low rates seems to have attained large proportions only since 1897.[1] The Interstate Commerce Commission took cognizance of the system in a decision rendered in 1899. It was enabled to do so by virtue of the Import Rate decision above cited, whereby the United States Supreme Court authorized it to consider

[1] The important testimony taken by the Interstate Commerce Commission in November, 1901, relative to widespread rate cutting in export rates during the past year is not yet accessible for use in this connection. See p. 354 *supra*.

not only circumstances and conditions within the United States, but also those relating to ocean transport and foreign competition.

The railroads justify their action on the ground that only by making such concessions in export rates could they lay down grain in foreign markets in competition with other parts of the world. On the other hand, it was not made clear why such competition from foreign markets had become any more acute in the last few years than prior to that time. There appears to be much force in the argument of many shippers, and also of some railroad men, that this anomalous condition of rates was due, not so much to the keenness of foreign competition, as to the rivalry among the American carriers themselves. In other words, it was said that the competition between the Gulf ports and the Atlantic ports was responsible for the abnormally low rates on export business. In line with this argument would seem to be the fact that it is the rates upon wheat and not upon flour for export, which have decreased more than in proportion to the decrease upon similar commodities for domestic consumption. It is indisputable that a vast expansion of the export business through Gulf ports has taken place in the last few years, and the keenest rivalry exists at the present time throughout a large part of the Central States between the carriers serving these export centers.

RATES ON WHEAT AND FLOUR.

Coupled with the discrimination against the domestic consumer of grain was a still further alleged discrimination in the freight rates charged upon flour. It was clearly proved, and has been shown by testimony before the Industrial Commission, that freight rates upon wheat for export were at times very much less than the rates upon flour. It was stated, for instance, that American millers labored under a disability of as much as eight cents per 100 pounds in favor of their English competitors. This followed naturally from the fact that wheat could be transported to England and there ground much cheaper than it could be ground in the United States and then transported. Inasmuch as the average profit is scarcely more than two or three cents per 100 pounds, it will be seen that this system worked great hardship to American industry. It bore with particular severity upon the small millers, partly because their cost of manufacture is more in any event, and also because any limitation of export business forced the large mills to enter more keenly into rivalry for the domestic market. The Interstate Commerce Commission, after investigation, decided that the rates upon flour should not be more than two cents higher per 100 pounds than those upon wheat. This difference was permitted, however, on account of the greater cost of handling the manufactured product. It is significant of the present state of the law that the railroads have paid no attention to this order, and although conditions have improved somewhat there is still great complaint.

RATES IN TRUNK LINE TERRITORY.

The most satisfactory situation as respects rate adjustment in the United States is found in the territory north of the Ohio and the Potomac and east of the Mississippi rivers. This is to be expected, of course, by reason of the density of both population and traffic and the conservative policy respecting the construction of new lines pursued both by the railroads and the State legislators. There is practically an agreement between all the lines in interest by means of which rate wars have been largely eliminated during the last few years. The system is comparatively simple in principle, although it has required the experience of many years to work out in detail. All rates from intermediate points between Chicago and New York are fixed at a definite proportion of the Chicago-New York rate both for east and west bound shipments. Thus, for instance, the rate from Detroit to New York is 72 per cent of the Chicago-New York rate. The percentages from the following points are as indicated, namely: Cincinnati, 87 per cent; Indianapolis, 93 per cent; Grand Rapids, 96 per cent; Peoria, Ill., 110 per cent; Louisville, Ky., 100 per cent; Milwaukee, 100 per cent; and even points in Canada, such as Toronto, 78 per cent, etc. Every place, no matter how small, has a special percentage of the New York-Chicago rate assigned to it. This rate varies with any variation of the Chicago-New York rate. Thus, when the Chicago-New York rate, first class, is 75 cents, the rate from Indianapolis is 93 per cent of that figure. Any change of Chicago-New York first-class rates changes every intermediate rate in exactly the same proportion. These percentages have been fixed after a long process of compromises among conflicting interests. Another point of special interest is that these rates are adjusted on the basis strictly of the long-and-short-haul principle, namely, that all intermediate points enjoy a somewhat lower rate than the terminal points, although the percentage may not be exactly upon a mileage basis. Consideration of the distribution of these percentages points apparently to many inequalities in the adjustment; but as a matter of fact it will be found that the existence of competing routes, of water transportation, or of other factors, offers a partial explanation in most instances. The advantage from the point of view of the smaller towns is particularly great, as appears from a comparison of these conditions with those which prevail in the South, where the basing-point system is in force. The trunk-line practice, resulting from arbitration and compromise through many years, leaves less to be desired concerning the adjustment of conflicting interests of different localities than systems in other parts of the country.

SEAPORT DIFFERENTIALS.

One feature of rate adjustment in trunk line territory is perhaps less satisfactory. It concerns the existence of the so-called differential rates from Chicago to various Atlantic seaports. As a result of the rate wars of 1876, an agreement was entered into in the following year by interests controlling all the trunk lines. An attempt was made to equalize the aggregate cost of ocean and rail transportation between competing points in the West and all foreign and domestic points reached through Baltimore, Philadelphia, New York, and Boston. Under this agreement Baltimore was allowed a rate of three cents below the rate from Chicago to New York; Philadelphia enjoyed a concession of two cents; while Boston had its rate fixed at a certain percentage of the Chicago-New York figure. There was considerable dissatisfaction expressed at various times with these differentials, and the whole matter was submitted to arbitration in 1882. The commercial interests of New York, as well as of the railroads centering in that city, have complained bitterly that these differences, once adjusted upon a very much higher scale of rates than at present, have become increasingly burdensome now that the Chicago-New York rate is perhaps not more than a third or a quarter of what it formerly was, while the differential has remained at a fixed figure. The recent decline of the export commerce of New York is in fact ascribed in a large measure to the operation of these differentials, and the leading case before the Interstate Commerce Commission, instituted by the Produce Exchange of New York, endeavored to secure their abolition. The Commission held, however, that the differentials—recognized by the Joint Traffic Association of 1896—were legitimately based upon competitive relations of the carriers; and that consequently no unlawful preference or advantage had been accorded to the cities competing with New York for export business. It is predicted by witnesses before the Industrial Commission that these differentials will of necessity be readjusted within the next few years.

NEW ENGLAND AND THE CANADIAN RAILROADS.

The railroad problems of interest to New England are particularly those which have to do with the competition of Canadian roads, such as the Grand Trunk and the Canadian Pacific Railway. New England, being remote from the great consuming centers of the country, is compelled to transport its manufactured products long distances in order to reach a market; and the intensity of competition is increasing with the establishment of local manufactories throughout the Western and Southern States. The existence of Canadian railroad competition has made it possible not only for New England to secure

cheap transportation to Chicago, but also to the Pacific coast and oriental markets. At the same time the interests of many of the border States, such as Minnesota, Wisconsin, Michigan, etc., are identical with those of New England. For the cheap through rates, irrespective of the scale adopted for local rates, offered by these Canadian roads not only give direct and cheap transportation over the Canadian roads, but also compel our own trunk lines to meet these rates in order to secure a share of the business. Various attempts have been made to hold the Canadian carriers to the terms of the interstate-commerce act, but with indifferent success. It may confidently be asserted that the abolition of the bonding privileges now enjoyed, and also of certain of the advantages afforded by the existence of this extraterritorial competition, would be highly detrimental to the interests of a large section of the country. At the same time it appears that the existence of this competition has a most unfortunate effect upon the stability of rates throughout trunk-line territory. The standard transportation routes are continually exposed to the temptation to cut rates in order to meet the competition of these extraterritorial, often governmentally subsidized, lines. One of the strongest arguments for the rehabilitation of pooling contracts under the law is undoubtedly that it will afford an opportunity for securing the harmonious action of all the American lines in forcing the Canadian carriers to come to terms. These carriers, being guaranteed a certain proportion of the tariff in a pool, may be expected to cooperate with the American roads, while at the same time perpetuating some of the advantages which New England has always claimed as hers by right of geographical location.

THE SOUTHERN RATE SITUATION.

The freight rate adjustment in the Southern States is perhaps the most unsatisfactory in any part of the country. This is apparent from the fact that a large and increasing proportion of the complaints before the Interstate Commerce Commission have arisen in this quarter

HIGH LEVEL OF RATES.

In the first place, freight rates in the Southern States are very much higher per mile than for any other section of the country. Some appreciation of the difference in this respect may be gained from the statement that, while the distance from New York to Chicago is practically the same as from New York to Atlanta, the freight rate on first-class goods in the first case is 75 cents per hundred pounds as against $1.14 to Atlanta. Differences scarcely less notable than this may be discovered everywhere throughout the South. It is indubitable, how-

ever, that a certain justification for higher rates in southern territory exists by reason, first, of the sparsity of population, which limits the volume of local business very greatly, and, secondly, by reason of the almost exclusively agricultural character of the country, yielding a traffic predominantly of a low grade.

DISCRIMINATION BETWEEN EASTERN AND WESTERN CITIES.

More serious than complaints as to the absolute amount of freight rates charged in the Southern States is the allegation that they are quite inequitably adjusted as between the different sections of the South itself. The whole situation in this respect has been thoroughly ventilated in the well-known cases before the Interstate Commerce Commission known collectively as the Cincinnati and Chicago freight bureau case. In essence this represented the claim of western cities to compete in the Southern States on equal terms with eastern centers, such as New York, Philadelphia, and Boston. It was claimed that an adjustment of rates as between the lines into the South operating east and west of the Allegheny range had been made upon a basis permitting the west to engage in southern trade only in respect of the products of the farm and the field, reserving to the eastern centers the business of supplying the South with manufactured products. Examination of the evidence shows that apparently some such purpose was roughly outlined under the old Southern Railway and Steamship Association along in the seventies. It is questionable whether the agreement ever took such concrete form as has been claimed for it by the advocates of the Western cities.

Representatives of these commercial interests are undoubtedly right in their assertion that rates into the South from such points as Cincinnati and Chicago are relatively very much higher than for an equal distance from New York and Boston. The amount of these differences may be appreciated by the fact that, whereas the rate from Cincinnati to Atlanta, Ga., is 94 per cent of the rate from New York to Atlanta, nevertheless the distance from Cincinnati is scarcely more than half of that from New York. Similar disproportions may be cited on every hand. It is claimed, however, and seemingly with justification, by the carriers, that these lower rates into the South from Eastern centers are almost entirely the result of cheap transportation by water down and along the Atlantic seaboard; that, in other words, an inevitable advantage is enjoyed by Philadelphia, Boston, and New York in competition throughout a large part of the South with Chicago, St. Louis, and other Western points.

The difficulty with any equitable adjustment of rates in the South appears to lie in the friction which exists between the affiliated railroads east and west of the Allegheny range, as above described. The roads east of the mountains, such as the Southern Railway, the

Atlantic Coast Line, and the Seaboard Air Line, are prevented from making certain concessions, as, for example, in the rates upon cotton from Southern points north, merely by the opposition of competing carriers up the Mississippi and Ohio valleys. These latter roads, on the other hand, seem willing, in order to stimulate the business of Western centers, to reduce rates from those points, but are prevented from so doing by threat of rate wars from the Eastern lines, and especially those which operate in connection with the coastwise steamship companies. The result is that an exceedingly hard and fast adjustment has been secured, which has permitted of no concessions on either side without corresponding concessions on the other. Between the two, rates are maintained on practically the same basis, both as to absolute figure and relative proportions, as existed twenty or twenty-five years ago; and this in spite of great changes in the distribution of population and of industry. A conclusive instance of this rigidity of rates, which prevents adaptation to changing conditions, may be found in the recent arbitration of rates upon cotton from Mississippi River points to the cotton mills in the Carolinas. It has long been notorious that these Southern mills were compelled to pay a higher rate upon cotton from such points as Memphis than was paid by their New England competitors. Thus, for example, rates have at times been 59 cents from Mississippi points to South Carolina, while they have been only 55½ from the same points to New England. The growth of the textile industry in the Carolinas has resulted in a consumption of cotton far exceeding the production within those States. At the same time the increasing attention devoted to cotton manufacture of the higher grades has also compelled the manufacturers to draw their supplies from more distant centers of cotton production. The Eastern railroads, in the light of these changes, have desired to equalize conditions as between the Northern and the Southern mills; but certain of the other roads, having no interest in the Southern mills and an entire unity of interest in the New England industries, have sought to prevent any such concessions.

BASING-POINT SYSTEM.

Two other peculiarities of the rate adjustment in the Southern States are, respectively, the widespread existence of low-grade water competition, and, secondly, the adoption of the so-called basing-point system. These two features of the general rate adjustment are indissolubly connected. The existence of water competition is alleged as a reason for the persistent violation of the long and short haul clause. That clause is set aside in order to permit of the institution of special rates to favored localities which lies at the bottom of the basing-point system.

The so-called basing-point system, although not absolutely confined to the Southern States, has reached a far higher stage of development there than in any other section of the country. In principle it is simply this, that certain cities are established as basing points, and that rates to all other points in that neighborhood are made by adding to the through rate into the basing point the local rate from that city to the final destination. Since local rates are always exceedingly high, this operates to confer on the cities thus established a very great advantage in the matter of charges. As will be seen at once, this system is in direct opposition to the principles underlying the so-called long and short haul clause. According to this section of the Act to regulate commerce, freight rates should be graded according to distance unless there are some peculiar reasons for giving a lower rate to the more distant point. This principle is fully discussed in another place. According to the basing-point system, however, goods may be transported directly through the point to which they are ultimately to be carried, and after being hauled to the basing point with the charge for that haul, they may be thereafter hauled back again with the addition of a high local rate for the service. The justification for this departure from the long and short haul principle, as urged by the carriers, is the existence of water or other effective competition at the places that are established as basing points. The situation in the South is peculiar in this respect. The entire territory is threaded with a series of more or less navigable water courses which penetrate from the sea or the Mississippi far into the interior. The carriers allege that in order to secure any portion of the traffic to the points where water competition exists, low rates must be made quite irrespective of the rates to intermediate noncompetitive points. They affirm that to lower all rates to the compelled competitive level would deplete their revenue and inevitably lead to bankruptcy.

At this point a distinction must be made, however, and one not clearly emphasized in any of the numerous decisions upon rates in this territory. There seem to be three distinct varieties of basing points. The first of these includes such cities as Savannah, Ga., and Montgomery, Ala., where it is indisputable that effective competition by water, of a general or limited character, exists. The second type of basing point is of railroad centers like Atlanta and Birmingham. In these cases there is no water competition, but the competition of carriers is exceedingly keen and operates over such widely divergent routes that consolidation between them is impossible. Pooling being prohibited by law, the several carriers must, as they allege, in order to obtain a fair pro portion of the business, make lower rates than to other places where such conditions do not exist. The third class of basing points seems to be absolutely and entirely artificial. Such are, for example, a number of points in the southeastern part of Georgia, such as Cordele, Ameri-

cus, Albany, etc. In these cases the only criterion which seems to have been adopted is that the place shall have attained a sufficient importance to enable it to compel some carrier to give it special privileges in the matter of rates. As was tersely stated in a leading case—Cordele at that time not having been made a basing point—

> Cordele is not treated by defendant roads as a competitive point, because it is not a sufficiently large distributing point, and it is not such a distributing point because it is not treated as a competitive point. Hence it appears that the roads seek to excuse their wrongdoing by offering the results of the wrong in justification. Judged by its results, this system of rate-making is at variance with all the equality provisions of the act to regulate commerce.

The subsequent experience in this case is significant. One of the carriers at Cordele having afterwards discovered the advantage to itself in making this town a basing point, all the other railroads were compelled to acquiesce. Such a thing has happened frequently throughout the South, with the result that many places have been given strongly preferential rates for no other reason than the arbitrary decision of some one of the carriers. Even the railroads themselves recognize this fact. They often deplore the necessity for reducing rates because of action by competitors at some particular point, but no option remains. In justice to one of the most important roads, however, namely, the Southern Railway, it should be said that the long and short haul principle has been recognized in the main on its through line as far south as Atlanta. The principal and most persistent opponent of the long and short haul clause, on the other hand, has been the Louisville and Nashville Railroad. One of the worst evils of the whole system is that a refusal to accord preferential rates operates as a penalty whenever other competitors choose to initiate such a policy. It is most ardently to be desired that at some time a general readjustment of rates throughout this territory may take place in the interest of equality and fair dealing.

The contrast between the system in trunk line territory and the heterogeneous one which prevails in the South can not have failed to attract attention. Realization of some of the inequalities seems to have led at one time to a determined effort to apply the trunk line system to the carriers in the Southern States. Reference is made here to the report submitted in 1880 to the Southern Railway and Steamship Association, under the chairmanship of Mr. A. Pope, now of the Seaboard Air Line Railway. A committee was authorized to devise a plan for the scientific readjustment of rates throughout the South. The following quotation is significant:

> Your committee entered upon the performance of their duty entertaining the sentiment that experience and observation have rendered generally potent among those in charge of the revenue interest of transportation lines, namely, the necessity for more intelligent and defensible methods of making competitive freight rates than the following of figures, descending to us from tariffs named on arbitrary bases or

conditions now obsolete, or by the assumption of differences between centers of trade now changed or junction points now no longer such, or other methods for which there are no reasons capable of satisfactory explanation.

It is unnecessary to state in detail the system which was devised. Suffice it to say that representatives of the important lines subscribed to it, but that it could not be practically applied because of the opposition of other lines, selfishly viewing their own particular interests to the exclusion of all others. Since this time no comprehensive attempt at readjustment of the rates has been made. Minor changes and improvements have been made wherever possible, but, owing to the tenacity with which each of the carriers adheres to its own particular policy, no general improvement has been effected. In addition to the features peculiar to the South, which have been described above, there is also much complaint respecting the adjustment of carload and less than carload rates to distributive centers. These are identical in character with those which have been described elsewhere, both in respect to the transcontinental rate situation and to the general principles of carload adjustment by themselves.

TRANSCONTINENTAL RATES.

The attention of the Interstate Commerce Commission has recently been directed to the problem of transcontinental rate adjustment. The possible development of commercial intercourse with oriental countries and the acquisition of territory by the United States in the Pacific has rendered these questions particularly important at the present time. Four distinct grounds for controversy in this territory may be mentioned. They turn primarily upon the interpretation of the long and short haul clause, and upon the effect of special carload ratings in the development of local jobbing interests. The primary factor in the making of rates to the Pacific coast has long been the existence of competition by water, either by way of Cape Horn or the Isthmus of Panama. The facilities for cheap transportation over these routes have compelled the all-rail lines to make low through rates which would enable them to secure a portion of the business. Inasmuch, also, as most of the competition of the steamships over these very long routes involves shipments in large quantity, competition with the railroads has mainly been felt in making rates by the carload. The result has been the existence for many years of a special transcontinental tariff, more or less uniformly adopted by all the roads, which consists in the main of commodity rates for carload shipments, the scale of these rates being sufficiently low to meet steamship competition as above described. It was never contemplated by the enactment of the long and short haul clause to prohibit discrimination at distant points when absolutely necessary to meet water

competition. The Interstate Commerce Commission recognized the necessity imposed upon the transcontinental carriers for making such concessions.

This simple situation has been complicated by the fact that all of the transcontinental lines except the Southern Pacific, with its eastern rail terminus at New Orleans, have a particular interest in building up both manufacturing and jobbing business at their eastern terminals. Such action enables them to secure the entire charge for the transportation of commodities to the Pacific coast without the necessity of a prorating division, as when goods are hauled from the Atlantic coast. The situation then resolved itself practically into a competition of markets. Chicago, St. Louis, and St. Paul were pitted against New York, Philadelphia, and other Atlantic ports in rivalry for the trade of the Pacific coast. In order to benefit the cities in which they had a peculiar interest, the all-rail lines therefore gradually introduced what is known as the system of "postage-stamp rates." That is to say, they gradually extended to one city after another, east of the Mississippi River, the right to the same rates to the Pacific coast as were enjoyed by the seaboard cities. As a consequence, for some years every city east of the Mississippi has been able to ship goods to San Francisco at the same rate which is paid from Boston and New York, which are more than a thousand miles farther away.

This system is justified in theory, even for rates from Chicago and St. Louis, as due to water competition; and it has been said that commodities are sometimes shipped from as far inland as this to the Atlantic seaboard, and thence to San Francisco by water. The latest phase of the controversy reveals the weakness of this argument. The inland cities, such as Chicago and St. Louis, having been accorded the same rate to San Francisco as New York and Philadelphia, now demand, and are pressing their claims before the Interstate Commerce Commission, lower rates than the Atlantic cities in proportion to their relative nearness to San Francisco. In other words, they demand that the rates, instead of being made upon the "postage-stamp basis"—absolutely the same from all cities, however remote—shall be graded. This would give Chicago, St. Louis, and St. Paul an advantage in laying down manufactures or in distributing products secondarily, in competition with the older centers at the East. To this policy the jobbing interests of the Pacific coast strenuously object. From their point of view, any grading of rates will enable the Western cities to compete with them directly in local distributive business. They do not object to the low rates from the eastern seaboard, nor would it avail to do so, because the natural conditions of water competition are beyond control. Moreover, the low rates from Atlantic points are all, as above said, on carload lots, and such low carload rates operate distinctly to the advantage of the Pacific coast

jobber, enabling him to obtain goods in wholesale lots, and then to break bulk in order to distribute them up and down the coast.

From the preceding statement of conditions, it appears that the question of reasonable adjustment as between carload and less than carload rates is intimately connected with that of the grading of rates to interior centers. Viewed by itself alone the carload question is quite the same as that presented in the Southern States. It involves the rivalry between jobbers in Eastern centers and jobbers in the far West or South, as the case may be. The jobbing interests in St. Louis, in particular, are now instituting proceedings before the Interstate Commerce Commission in order to compel a readjustment of the ratings for large and small lots in their interest. St. Louis desires to abolish any distinction between carload and less than carload lots for the patent purpose of enabling it to sell directly throughout Pacific coast territory in competition with San Francisco jobbers. The latter, on the other hand, demand that all less than carload lot ratings shall be abolished for transcontinental shipments, so that they may purchase their goods by the carload and resell them in parcels. The considerations involved are of exceeding nicety, turning upon the principles both of cost of operation and of the value of traffic. They have been discussed in another section of this report.

A second phase of the transcontinental-rate situation is concerned with the long and short haul rates to the so-called mountain cities, such as Denver and Salt Lake City. Rates to these cities, as well as from these cities out in either direction, are very much higher than the rates for longer distances through them and beyond. Thus, for instance, in the case of Pueblo it has been shown that bar iron was hauled 2,400 miles, from Chicago to San Francisco, for 50 cents per 100 pounds, and rails were hauled the same distance for 60 cents; while for the haul from Pueblo, Colo., to San Francisco, only 1,500 miles, the rate on both commodities was $1.60. Cotton piece goods are shipped from Boston to Omaha for 52 cents per 100 pounds, with the added rate on to Denver of $1.25, giving an aggregate of $1.77. In face of this, the rate through Denver to California is only $1. Many other examples of the same kind will be found in the testimony before the Industrial Commission. It is urged by the railroads that this situation is inevitable, inasmuch as the low through rates are compelled by water competition. Yet, as has been clearly evidenced in the well-known "Kindel" decision, there seems to be little more reason for according low rates to Missouri River points than to Denver or Salt Lake City. In other words, having recognized the principle of postage-stamp rates as far west as the Missouri River—according to every place as low rates to San Francisco as exist on the Atlantic seaboard—there seemed to be no reason why the limit should not be pushed farther west. This argument has been presented with great

cogency and force. Largely as a result of it, in the Kindel decision, the Interstate Commerce Commission ordered the carriers to desist from such extreme discrimination against these mountain cities as was there shown to exist. Much the same issues are raised in a more recent case, involving rates to San Bernardino from Los Angeles, Cal. It is interesting, in connection with these latter cases, to notice that the San Bernardino case has been pending since 1889, a decision having been finally rendered in 1901. This is merely another instance of the intolerable delay incident to the present operation of the law.

The third important problem which is involved in transcontinental rate-making concerns the relation between the Canadian Pacific Railway and the trunk lines in the United States. The Canadian Pacific has claimed, and was, in fact, accorded for some years a differential, or lower rate, in order to offset its disability in the matter of distance, extra-territoriality, etc. Thus, for instance, in 1888 the Canadian Pacific was allowed to quote rates 30 cents per 100 pounds below those by the standard lines. The rates were afterwards increased on first-class traffic. The other roads refused, however, to continue the differential at this figure, and after a year the differential was reduced to 28 cents from the Atlantic seaboard. The question was bitterly contested after that until 1892, when all agreements were abandoned. Since this time the Canadian Pacific has acted independently, taking, as a rule, rates about 10 per cent less than its competitors in American territory. The whole question was submitted to arbitration in 1898, and by a divided opinion two out of three of the arbitrators decided that the Canadian Pacific Railway was not, nor should it be, entitled to a differential under the rates made by the United States lines. The intricacy of the question is indicated by the nonconcurrence in this conclusion of so well-recognized an authority as J. W. Midgley. The railroads concerned having all agreed to acquiesce in this decision, the situation has been far more harmonious in this respect than for many years previous.

RATES UPON GRAIN AND COTTON.

Certain of the rate problems involved in the transportation of grain have been already discussed under the head of "Import and Export Rates." Another phase of the rates upon staple products is presented by what are known as milling-in-transit rates. This system is simply that of according to grain which is unloaded and milled at an intermediate point, the low through rate from the point of origin to that of consumption. Thus, for instance, wheat grown in North Dakota may be unloaded and ground into flour at Minneapolis and thence shipped to New York at the through rate from its point of origin to New York. Oftentimes a very small charge, as, for instance, one cent per 100 pounds, is made for the privilege. This system prevails through-

out the Southern States also. Grain is brought, for instance, from Kansas City to Nashville or Birmingham, milled there, and shipped farther south for consumption. The rate charged is based upon the entire haul from Kansas City to the local point where the flour is consumed. Obviously this system stimulates very greatly the development of the milling industry at intermediate points. It is opposed correspondingly by the large cities which enjoy special privileges in the matter of low rates.

Precisely the same principle is involved in what are known as "floating-cotton" rates. In this case the system has developed of permitting cotton to be unloaded in transit and compressed at an intermediate point, it being thereafter reshipped to the point of destination at a through rate from its point of origin. Thus, for example, cotton may be hauled 20 or 30 miles to one of the larger towns. There it is unloaded, sorted and compressed, reloaded, and sent on as if it had not been interfered with at all. Obviously one rate for the entire shipment is much less than the local rate into the town—which is always very high—plus a second rate from that town on to destination. This system in respect to cotton has developed even further than that of milling in transit of grain; for in the latter case the grain must be unloaded at some point on the line to destination, whereas in the case of cotton it may, under rulings of the Interstate Commerce Commission, be actually hauled *away* from its ultimate destination a number of miles and then reshipped back over the same line through at a lower rate than it could otherwise have enjoyed. Thus, in a leading case decided in 1899 it was held by the Interstate Commerce Commission that cotton could be hauled from Gattman, Miss., 41 miles northwest to Tupelo, compressed there, and then hauled back again through Gattman and Birmingham to New Orleans.

Important centers, such as Memphis, which formerly enjoyed almost a monopoly of the compressing business, have strenuously opposed the development of this system. On the other hand, it offers a distinct advantage to the grower, because in place of selling the cotton through cotton factors at Memphis or other centers, it may be sorted and compressed at local stations. By this means much expense in the matter of drayage, handling, and commissions is saved. This system is particularly advantageous because it tends to break up the pernicious basing-point system, which tends to centralize all business at a few important points in the Southern States. Almost a complete revolution in the matter of handling cotton has been effected during the last few years by the growth of this practice. Not only has the floating-cotton system developed further than that of milling in transit by according the right of shipping even backward, away from the ultimate destination; it has also permitted of liberality in the handling of the product itself. It has been held that it is not even necessary for

the same cotton to be reshipped from the point of compression. A carload started from the initial point for Boston, for example, may never reach there, other cotton being substituted for it. The destination of the car may be, and frequently is, changed. A few dozen grades of cotton being on the market, the original shipment into the point of compression may be entirely re-sorted and distributed to a dozen different points. Even the ownership of the cotton may change while it is in transit. Nevertheless, the system has been held as valid under the law, and its beneficial effects during the last few years have been observable, especially in the Southern States.

V. FREIGHT CLASSIFICATION.

GENERAL DESCRIPTION OF SYSTEM.

Attention has been directed to the significance and importance of freight classification of late, by reason of the use made of it in the recent notable advances of freight rates throughout the country. Shippers have awakened to the fact that classification is a factor of primary importance in the making of freight rates. From a public point of view, the topic is important because the supervision or control of classification apparently was not contemplated by the original Act to regulate commerce. The anomalous situation is presented, therefore, of a grant of power intended to prevent discrimination in freight rates, while at the same time provision for control over an important element in such rate making was entirely omitted.

In order to determine what the freight rate upon a particular commodity between New York and Chicago is, two separate and distinct publications must be consulted. Although both of them usually bear the name of a railroad, and are issued over its signature, they emanate, nevertheless, from entirely different sources. The first of these is known as the Freight Tariff, or the Rate Schedule. It specifies the rates in cents per 100 pounds for a number of different classes of freight, numerically designated, between all the stations upon the lines of the railroad or its connections. Thus the Freight Tariff of the New York Central Railroad gives the rates from New York to several hundred stations, per 100 pounds, for first, second, third, etc., classes. This Freight Tariff contains no mention whatever of commodities by name, giving rates merely by numbered classes. The second publication, which must be consulted, supplies this defect. This is known as the Classification. Its function is to segregate all possible commodities which may be shipped into the several numerical classes already named in the Freight Tariff. Thus it designates dry goods or boots and shoes as first class. Turning back to the Freight Tariff, the rate from New

York to any particular place desired, for such first-class freight, is then found in cents per 100 pounds. It thus appears that a freight rate is compounded of two distinct elements. One shows the charge as varying for distance, the other shows the charge as determined by the character of the commodity. A variation in either one of the two would result, consequently, in changing the final rate as compounded. The important point to notice is, as above mentioned, that the sources of these publications are entirely distinct. The Freight Tariff is published by each railroad by and for itself alone. The Classification, on the other hand, is not peculiar to that railroad, but is issued for it by a body known as the Classification Committee, which is composed of representatives from all the carriers operating in that territory. To this committee is delegated by the railroads the power to determine what classification shall be assigned to every commodity which may be shipped or received by the lines concerned. The railroads, to be sure, always reserve the right to file exceptional tariffs containing classifications which they independently put in force. These exception sheets, or commodity tariffs, as they may be called, will be considered by themselves.

At the present time, freight classification for all the railroads of the United States is performed by three committees, known as the Official, the Southern, and the Western, with headquarters, respectively, in New York, Atlanta, and Chicago. Each of these three committees has jurisdiction over a particular territory. Thus the Official classification prevails east of the Mississippi and north of the Ohio and the Potomac rivers, the Southern over the remaining part of the territory east of the Mississippi, and the Western throughout the rest of the country. In addition to these there is also a classification issued by the Transcontinental Freight Bureau, with headquarters at San Francisco. This bureau has supervision over classification upon the lines engaged in Pacific coast business. In a few States, notably Illinois, Iowa, and certain of the Southern States, what are known as State Classifications are in force, having relation, however, only to local business within the State. These are prescribed by the State Railroad Commissions and represent modifications to suit the exigencies of localities.

THE QUESTION OF CARLOAD RATES.

One of the most troublesome and perplexing questions in the adjustment of freight rates is the degree to which reductions should be allowed on shipments by carload as against shipments in smaller lots. One of the principal grounds of complaint relative to the advances of freight rates of 1900 was that the difference in the rate between carload and less than carload lots was thereby greatly widened. The

question is a vital one to all the shipping interests of the country, and inability to come to an understanding as to reasonable differences in rates in this respect underlies the primary difficulty in the establishment of a uniform classification for the United States as a whole. The justice of allowing a carload shipper lower rates than one who ships in small lots is apparent, on account of the difference in the cost of such service to the railroads. This has been recognized by the Interstate Commerce Commission and the courts as beyond question. Not only the amount of paying freight in relation to dead weight, but the cost of loading and unloading, of billing or collection, and of adjusting damages—all of these elements of cost are noticeably less in the case of a full carload. Turning from these considerations of cost to those prescribed by what may be called traffic principles, the difficulty in arriving at a just determination may be easily appreciated. Glass battery jars in less than carload lots are charged from New York to Atlanta, Ga., second-class rates, namely, 98 cents per 100 pounds. The same commodity when in carload shipments (not less than 20,000 pounds) are rated as fifth class, in which case the charge from New York to Atlanta becomes 60 cents. Here is a plain difference of 38 cents a hundred pounds, upward of 60 per cent greater charge to the small shipper whose business or capital is insufficient to justify shipments to such an amount. Two results of this discrimination are possible. In the first place, the large shipper is enabled to undersell his smaller competitor and perhaps to drive him out of that class of business. This may happen also as between two dealers, both located in the South and buying their supplies from New York. The second result is that under such rates it is impossible for the manufacturer or Northern jobber to sell direct from New York to the retailer in the South in competition with the jobber located in the South, who ships his goods in at the cheap carload rate and then distributes them thereafter. The problem thus concerns at the same time both the small local shipper or dealer as against the large local shipper or dealer, and also the jobber in New York as against the jobber in Atlanta. In the latter case, of course, the question is complicated by the local rates under which the Atlanta jobber must redistribute to the country stores the goods which he has already shipped in on a low carload rate.

Obviously, in any representation as to the reasonableness of the difference in rate which shall be allowed either on the basis of cost or of traffic principles, the interests of localities are commercially pitted one against another. To change the illustration, the New York or Chicago jobbing house desiring to sell its goods directly to the retailers throughout the West wishes to have a relatively low rate on such small shipments as the retailers in smaller places alone can afford to purchase. Participation in this distributing business, however, is resented by the jobbing houses located in Western centers, Omaha, Denver, Kansas City, etc.,

which all insist that there should be so wide a difference between carload and less than carload rates that they may ship in their wholesale purchases at a low rate, and thus compete in their own territory with the manufacturer in the East or the jobber in New York who desires to sell direct. Comparison of the classification in different parts of the country reveals the influence of these local interests. The railroads in Official Classification territory desire, of course, to build up the manufacturing and jobbing cities tributary to them. This can best be done by encouraging the growth of Eastern jobbing centers, stimulated by as low rates for retail as for wholesale shipments. The railroads in the Western and Southern territory, on the contrary, are obliged to consider the claims of their constituents, and to correspondingly minimize the advantages which foreign competitors of their local wholesale dealers enjoy. Another consideration must also be kept in view, namely, that carload ratings can only be accorded when business has developed a magnitude sufficient to permit shipment in that volume. The growth of the volume of business in general, therefore, might be normally expected to produce an increase in the proportion of carload ratings. Experience confirms this view. In 1886 the railroads from the Atlantic seaboard west made no distinction as between carload and small lots in 85 per cent of the articles classified. By 1893, however, more than half, or, to be specific, 53 per cent of the articles enumerated in the classification were allowed a lower rate for the large shipment. In Southern territory, on the other hand, about this time only 15 per cent of the articles enumerated were accorded a concession in rates for carload shipments; and one of the reasons for this was undoubtedly that the demand for shipments of this amount of other commodities had never made itself felt. It is only very recently, to take a specific illustration, that business has developed a volume sufficient to permit of the shipment of fly paper in carload lots. Until such time no discrimination whatever between the large and the small shipment would probably arise. The normal development, then, is toward an increase in the number of lower rates quoted for carload lots. This is retarded only by the influence of the jobbers and manufacturers in the Eastern trade centers, who insist that they shall be permitted to compete on even terms with local jobbers by making their shipments direct in small lots at rates approximately as low as the local jobber pays on carload lots. This question is an exceedingly important one requiring the balance of opposing interests to a nicety. Many anomalies, despite the care of the railroads, must undoubtedly exist. Thus, for example, it is not clear why axes should be accorded a special carload rating in the Official Classification, whereas the freight rate on hatchets is the same whether the shipments be in 100 pound or 20,000 pound lots.

Still further difficulty arises on consideration of the minimum which

shall be accepted as a carload. If a shipment must aggregate 20,000 pounds or more in order to be entitled to a low wholesale rate, any increase of this minimum lading must naturally operate to the disadvantage of the small shipper. It also still further increases the disability under which the manufacturer distributes his goods direct in competition with the middlemen. At the same time an increase in the minimum carload rating must be commensurate with the notable increase in the capacity of the rolling stock, to which attention has recently been called. Exception has been taken in many quarters to the action of the associated railroads in thus increasing their minimum carload rating in 1900, but justice to the carriers demands that the question of cost, as affected by the constantly increasing size of their cars, must be considered. The difficulty is that every change of this kind requires an entire recasting and readjustment of the rates in order once more to equilibrate the conflicting interests involved. Whether questions of such nicety may properly be left to the railroads for determination, without participation and even without representation of any of the other parties concerned, is a matter demanding serious and attentive consideration.

COMMODITY RATES.

One of the means adopted by railroads for enabling their patrons to reach out beyond their immediate territory and seek an entrance into new markets is by the concession of special or, as they are known, commodity rates. These form an entirely distinct variety of rates from those quoted in the classified tariffs. They do not involve inequality between persons, although they are special rates, inasmuch as such commodity tariffs are publicly filed with the Interstate Commerce Commission and are open to all producers at a given point of shipment. Such discrimination as they engender is usually of a local rather than a personal form. In other words, commodity rates may be granted to a shipper in a particular place in order to build up an industry at that point. Such commodity rates are almost invariably granted for shipments by carload lots. This is especially the case in the transcontinental tariff, which is issued to meet competition with a long sea route. Such competition is entirely in large shipments by carloads. These rates are also found most commonly in a territory where manufacturing is struggling to gain a foothold, as in the Southern States. Thus, for example, if it be shown to the traffic manager of a railroad that only by concessions upon the product of a new industry can it maintain itself in competition with already established industries elsewhere, he may elect to grant a commodity rate until such time as the industry has become firmly established. Commodity rates obviously constitute an exception to the regular tariffs and seem to be rather increasing in number.

The embarrassment in the case of a railroad is that, such a special rate once having been granted, it becomes exceedingly difficult to withdraw it. One of the objects which seems to have been contemplated in the recent advances of freight rates by means of change in classification has been the retirement of a great number of these special, though public, commodity rates. It appeared at the hearing before the Interstate Commerce Commission relative to classification upon the trunk lines, that in December of 1899 the New York Central had about 1,370 of such special rates. The adoption of Official Classification No. 20 canceled 175 of these. Inasmuch as such commodity rates were upon carloads, the effect of this withdrawal was practically the abolition of the carload rating for the future. It is important to notice that progress toward uniformity of classification throughout the country seems to involve an increase in commodity rates. Compromise between classifications, once suited to particular sections of the country with their local industries, necessitates a greater number of exceptions in order to meet the exigencies of particular cases. The increase in number of commodity ratings since 1887 may be accounted for by reason of this fact. This is one of the primary objections to the adoption of a uniform classification for the United States. As one witness before the Interstate Commerce Commission testified, "If ever there is a uniform classification it will take a warehouse to hold the commodity tariffs."

THE ECONOMIC BASIS OF CLASSIFICATION.

The conditions above described, under which freight is classified for the railroads of the United States, have resulted from long experience in the grouping of freight. It is unnecessary, perhaps, to explain the principle upon which such classification is made. Popular criticism is often directed against the railroads for discriminating in their charges as between different commodities which seemingly cost the railroad an equal amount to transport. In order to explain the reason for such classification, the problem must be considered from two distinct points of view. The first is that of operation, which determines cost. The second is from the standpoint of traffic, which measures value of service, as it is called. These must be kept clearly distinct from one another. The reasonableness of making a distinction in freight rates according to the character of the commodity is easily apparent, as judged on the basis of cost of handling. A multitude of factors must be considered in this respect. These are well stated by the Interstate Commerce Commission in 1897:

> They would take into account whether commodities were crude, rough, or finished; liquid or dry; knocked down or set up; loose or in bulk; nested or in boxes, or otherwise packed; if vegetables, whether green or dry, desiccated or evaporated; the mar-

ket value and shippers' representations as to their character; the cost of service, length and direction of haul; the season and manner of shipment; the space occupied and weight; whether in carload or less than carload lots; the volume of annual shipments to be calculated on; the sort of car required, whether flat, gondola, box, tank, or special; whether ice or heat must be furnished; the speed of trains necessary for perishable or otherwise rush goods; the risk of handling, either to the goods themselves or other property; the weights, actual and estimated; the carrier's risk or owner's release from damage or loss. All these circumstances, bewildering as they appear to a layman, are comparatively simple to the expert, and the considerations which have retarded the adoption of a uniform classification have had little to do with difficulties of this description.

The railroad must, in self-protection, charge more for hauling a commodity if it actually costs it more in the long run to perform that service.

It is less easy to appreciate the justification for freight classification on the basis of value of service. Thus, it is not at first sight reasonable that of two commodities which cost the railroad exactly the same amount to transport, one should be charged twice as much as the other. For example, the rate on anthracite coal is very much higher than upon soft coal; the rate upon wheat is higher than the rate upon some other food stuffs; the rate upon fine woolen goods is very much higher than upon coarse cotton cloth, etc. It has been urged frequently that any discrimination in the freight rate on the basis of difference, either in the value of the commodity itself or in the value of the service rendered, is unreasonable and unjust. The case, however, is entirely analogous to that of discrimination between a long and a short haul of the same commodity. The principle is perfectly defensible in both cases, and has been accepted in legal decisions as well as by economic writers for many years. It is based upon the fact, which confronts one at every turn in a discussion of railroad economics, that a large proportion of the expenses of a railroad is independent of the amount of traffic. These fixed expenses must be met at all cost if the road is to remain solvent. They constitute a charge upon the entire traffic of the line and are not susceptible of apportionment to each unit of transportation. Any rate which will contribute a surplus, small or large, above the mere cost of transportation—that is to say, above the expenses incident to its carriage, and thereby lessen, by the amount of that excess, the burden of the fixed charges remaining upon other traffic, is justifiable, but only under two conditions. The first is that the goods at any higher rate will go by another route or not at all, and the second that the effect may not be ruinous upon the course of business. Thus a long haul at a lower rate, if it must be lower in order to secure the business, than the rate charged for a shorter haul, constitutes no injustice to the local shipper; for the surplus remaining above the cost of haulage of that particular increment of freight lessens the charge which must be

made upon local freight for meeting interest on bonds, maintenance of way and equipment, etc., all of which charges go on independently of the traffic. On precisely the same grounds, a discrimination of freight rates in favor of the cheaper commodity or the less valuable service may be defended. Coal or sand, transported at 2¼ mills per ton-mile, may reasonably be carried at that rate, while the road is charging three or four times as much per ton-mile for hauling dry goods or fine hardware. For if a quarter of a mill per ton-mile can be earned above the expenses incident to hauling that sand or coal, it enables the rates on the dry goods or hardware to be maintained at a lower point than they otherwise would. It is unnecessary to elaborate this principle further; it is everywhere accepted as valid.

Classification of freight as actually effected in practice in the United States seems to be entirely independent, however, of considerations of cost, except in a most general way. Cost of course enters in, so far as the entire revenue obtained under the classification upon all kinds of commodities must jointly equal or exceed the expenditures made; but, on the other hand, as applied in practice it is difficult to see how any other principle than "charging what the traffic will bear" receives consideration. In the words of a competent witness, a "freight tariff is made as it was, not because it ought to be that, but because it must be that." That is to say, classification must be so adjusted as to secure the largest amount of business possible at the highest rate compatible with that amount of business. Obviously both amount and rate of charge, as determined by classification, are interrelated. The procedure of the classification committees seems to have been mainly based upon considerations of revenue. This has been clearly evidenced in proceedings before the Interstate Commerce Commission relative to the recent advance of freight rates in 1900. No estimate, even, as to the amount of additional revenue nor as to the relation of revenue to rates, was or could be attempted. Similar testimony has been taken before the Industrial Commission. Obviously the result of such methods must be that inequalities and discrimination as between different commodities should arise. By virtue of the complex character of the issues involved, this is to be expected in any event. Freight classifications as they exist to-day, therefore, represent merely the rule-of-thumb experience of the railroads in adjusting freight rates upon different commodities to suit the commercial conditions which happen to prevail at the time. The more or less indefinite character of these classifications is exemplified still further if it is attempted to determine any fixed relation between the different classes. This is particularly true when to the classification is added the element of distance, as shown in the freight tariff published by each individual railroad. The rate from New York to Durham, N. C., on first-class freight may be 15 per cent above that for freight of the second class; the second

class may be 20 per cent above that of third class for this distance, etc.; yet the difference between first and second class for another distance, as, for instance, between New York and Jacksonville, Fla., may be 20 per cent; that between second and third may be 27 per cent, and so on. Such considerations as this serve to emphasize still further the resultant inequality incident to any general advance of freight rates by a mere transfer of commodities from a lower to a higher class.

PROGRESS TOWARD UNIFORMITY OF CLASSIFICATION.

Present conditions in the United States relative to freight classification are far more satisfactory than they were before the enactment of the Act to regulate commerce in 1887. The progress toward uniformity exhibited has been notable. Conditions prevalent in 1887 were almost intolerable, so great was the number and the diversity of the classifications throughout the country. Some applied to local business only, and were peculiar to each road. Some applied only to west-bound business, others to east-bound traffic. It was stated by the traffic manager of the New York Central Railroad before the Interstate Commerce Commission that there were at one time 138 distinct classifications in the Eastern trunk line territory. The case of the Wabash Railroad in 1883 has been cited. A shipper desiring to determine freight rates over that road might be compelled to consult a classification for the Middle and Western States in 6 classes; one for the Southern Railway and Steamship Association territory in 18 classes; one for Mississippi Valley business in 5 classes; one known as the Revised Western in 9 classes; the Trunk Line East in 13 classes, and the Trunk Line West in 5 classes; a classification for Texas points in 8 classes, and two for the Pacific coast, according to direction, in 8 and 9 classes, respectively. This situation, rendering it almost impossible for any shipper to determine in advance what his freight rates were going to be and what his competitor was paying, early impressed itself upon the Interstate Commerce Commission. Interest in the issue increased to such a point that the House of Representatives in 1888 passed a resolution authorizing and directing the Commission to prescribe a uniform classification for all the roads in the United States. This arduous and perhaps impossible task was not apparently desired by the Interstate Commerce Commission at that time, and personal appeals were made to railroad officials to undertake the task in their own interest. The outcome was the appointment of a standing committee by a railroad convention in December of 1888, instructed as follows:

> To endeavor to combine the existing classifications in one general classification by the use of such number of classes as will prevent conflicting commodity as well as class rates in the several sections of the country without sacrificing the proper interests of the carrier.

Friction in this committee was apparent from the first, certain of the transcontinental roads declaring that their territory was not adequately represented. At last, however, the Western roads agreed to engage in the task; and all the interests united, under the chairmanship of J. W. Midgley, formerly commissioner of the Southwestern Railway Rate Association, in a report in June, 1890.

The difficulties were exceedingly great. It was insisted that, to be of use, the classification must be so suited to conditions throughout the country as to render but a small number of special or commodity tariffs essential. Jealousies arose, because of the desire of each road to enable its constituents to compete in territory where local interests were already being fostered by other carriers. A conclusion was, however, finally reached, which, in the words of the report, "it is believed all roads in the territory can afford to accept." This committee recommended, in order to give permanency to the classification and to adjust it to the constantly changing requirements of business, the establishment of a "Board of Uniform Freight Classification," consisting of two members from each of the following territories: New England Freight Association, Trunk Line, Central Traffic, Southern Railway and Steamship, Mississippi Valley, Western Freight, Trans-Missouri, Southern Interstate, and Transcontinental associations, as also the Mexican and Canadian railways. Changes in classification were to be made by a two-thirds vote. There were to be a chairman and three district chairmen having jurisdiction over the territory now assigned to the Official, the Southern, and the Western classifications. The consummation of this movement toward unification of classification, so devoutly to be wished, was prevented by the opposition of one of the Eastern trunk lines. Its reasons for refusing to accede to a classification which had received the approval of all the railroads of the country have never been made clear. It appears to be due to the fact that it had in force at the time a great number of special or commodity rates, adjusted in order to enable manufacturers along its line to reach out in competition in distant parts of the country. Any adoption of a uniform schedule would necessarily involve concessions, and this road was unwilling to concede the modifications necessary.

The failure of the attempt to promulgate a uniform classification for the United States, as above mentioned, has discouraged all further efforts in the same direction. In 1890 a renewed effort was made, through a conference of railroad representatives, to merge the Official and the Western classifications into one. This, if effected, would have reduced the number in force to two. The same jealous regard, however, for the local interests of each territory was apparent, particularly with reference to the distinctions to be made between rates for carload and less than carload lots. Special ratings for less than car-

load lots had long been favored by the Eastern trunk lines, inasmuch as they enabled manufacturers and jobbers in the East to hold their own in remote parts of the country in competition with local purchasers. This seems to have been the primary difficulty in preventing the amalgamation of the Official and the Western in 1890, since which time no renewal of the attempt has been publicly made.

It should be noted that along with this development in favor of a reduction of the number of classifications in force there has proceeded an increasing complexity in the character of each of the classifications themselves. Thus, for instance, in the last Classification of 1886, preceding Official Classification No. 1, there were only 1,000 distinct commodities named. The first Official Classification, in the following year, had increased to 2,800 titles, and by 1893, in the eleventh Official Classification, there were twice that number. Official Classification No. 21 has, in turn, vastly exceeded even this. Or, again, the Western Classification in force in 1893 contained 3,658 items, which represented an increase of 2,000 over the number of commodities classified by name in 1886. The reason for this is apparent. The development of traffic, both in volume and in complexity, necessitated a great number of independent decisions as to the rate which should be accorded specified commodities. In the absence of a general revision and simplification it was but natural that one item after another should be added, each bearing a particular name or being classified according to the mode of packing. A striking example of this increase of complexity is afforded by the cotton-goods schedule in the Southern Classsification. By 1900 there were upward of thirty different names under which cotton cloth was classified. Great complaint was occasioned, as well as the possibility of fraud by underclassification, etc. Most of these 30 names did not represent different values of goods, but were merely trade-marks, in many instances, of particular manufacturers. At the urgent request of the shippers this complicated schedule has been superseded, in the present year, by one comprehensive title of "cotton goods in the piece," irrespective of color, the particular method of weaving, etc. It is inevitable that under the system by which classification is effected such undue complexity should arise, and the increasing number of articles leads to inequalities as between commodities that are practically of the same value. This appears particularly in comparison between different classifications as described by the Interstate Commerce Commission. "For instance, excelsior, spring beds (k. d.), sawdust, and leather belting, are all in the second class of the Official Classification when shipped in less than carload lots. In the Western only the belting and beds are in the second class, excelsior is third, and sawdust fourth; while in the Southern beds are first class, belting second class, excelsior fifth class, and sawdust sixth." It has been admitted by those technically con-

cerned, before the Industrial Commission, that such absurdities are very difficult to eliminate. Their existence, nevertheless, emphasizes strongly the need for some tribunal to whom recourse may be taken when the classification works hardship. Even with the best of intentions on the part of the carriers, injustice is bound to arise. It may be corrected in one classification, but it is very difficult to secure harmonious action in the same direction by an entirely independent classification committee in an other territory.

PROPOSED UNIFORM CLASSIFICATION.

The Cullom bill, providing for a general amendment of the Act to Regulate Commerce of 1887, contains a provision requiring the preparation and promulgation by the Interstate Commerce Commission of one uniform classification for the railroads of the entire country. This revives again the issue so prominent in the years 1889–90. The development, as has been suggested, up to that time, had been distinctly toward the simplification of the system, but since 1890 no further advance in that direction has taken place. It would seem as if conflicting local interests had at last crystallized into the three classifications, and that any attempt to proceed further would meet with strenuous opposition. Undoubtedly the greatest disadvantage incident to the adoption of a uniform classification is that it would be difficult to meet the local situations reflected in the present classifications. In other words, the same commodity may be, from the point of view of the railroads in different territories, able to bear widely varying proportions of the total revenue levied upon the traffic of that section. Thus, for instance, cotton piece goods are classified as first in Western territory, third in the Official, and fifth class in the South. The reason for this is that such cotton piece goods are in both the South and the East the product of the country—the product of the local industry—and it therefore becomes the interest of the roads to foster those local industries by according a relatively low freight rate upon them. On the other hand, these goods, transported into the West where no cotton mills exist and no cotton is raised, become much more valuable relatively to other products classified. The number of illustrations of this kind might be multiplied; as, for example, by the case of fruit from southern California, which is, in that territory, accorded almost a commodity rate in order to foster the industry. This same fruit, reaching New England, becomes a luxury, and consequently is made to bear a very much larger proportion of the railroads' revenue. The East, as a rule, accords a low rate upon all manufactured products, this being territory in which local stimulus to industries of this sort is required in the direct interest of the carriers themselves. All these products, reaching the Western

territory, rise naturally to a higher class, as they increase in value to the community in which they are consumed.

Any unification of classifications which proceeds upon the basis of a mere compromise can scarcely be expected to be satisfactory. To return to our former example of cotton piece goods, classified as first in the Western territory, third in the Official, and fifth in the Southern, a compromise between the interests of the three sections would seem to be to make cotton goods third class for the country as a whole. This, obviously, will satisfy neither the West nor the South, because it will be too high to enable the Southern mills to compete as energetically as the Southern railroads desire with the mills at the North; and, on the other hand, the classification will be too low in the West to yield the roads the revenue which they claim they must have from goods of that character. The only alternative, and one which it is predicted will follow the adoption of such a uniform classification, is the quotation of special commodity rates wherever the uniform classification seems to be at variance with local interests. It is predicted that the number of special classes of commodity rates which would necessarily arise would lead to far greater complexity and possible discrimination than exist at the present time.

The preceding considerations suggest still another disadvantage arising from the prescription of a uniform classification for the country at large. It is this: That any change of classification always involves a change of the scale of rates at the same time. That is to say, the two are interdependent, so that if the classification is modified all over the country it will become necessary to change the scale of rates under which it is to be applied. For example, the rate from New York to Atlanta, first class, is $1.14, while the rate from New York to Chicago, about the same distance, first class, is 75 cents. To choose a first-class rating which shall apply on both these lines involves not only a reclassification of the commodities, but also that the new rate, applying upon first-class goods, shall be somewhere between $1.14 and 75 cents. Inasmuch as it has taken many years to reach the present adjustment, it seems hardly possible that a new arrangement can be made which at one time shall yield the railroads a satisfactory return upon their traffic. The difficulty herein suggested was clearly instanced in the case of a comparison made between the Southern Classification and the Uniform Classification proposed in 1890 by Mr. A. Pope, now of the Seaboard Air Line. The difficulty, and always a prominent one, was that the Uniform Classification was largely for carload lots, while the practice was entirely different in the old Southern Classification. Moreover, most of the Southern rates were given for goods "released;" that is to say, at the owner's risk. Cotton piece goods, non-released, in less than carload lots, from New York to Atlanta, were charged 60 cents

a hundred pounds under the old Southern Classification. As reclassified in the suggested Uniform Classification, the rate was 98 cents, and was given only for "released," that is to say, at owner's risk. The difference for the same commodity from Louisville to Atlanta was as 56 cents in the old Southern to 92 cents under the Uniform. Canned goods, not otherwise specified, "non-released," in less than carload lots, from Louisville to Atlanta, were charged 68 cents under the old Southern Classification. The new Uniform Classification, in order to yield the same revenue, made it necessary to charge a rate of 81 cents. Differences of this kind were manifest in every one of the thousands of commodities. In other words, the adoption of a uniform classification meant to abolish by a stroke of the pen all the old rates which formerly existed. An entirely new schedule of rates would have had to be worked out, with the most uncertain results upon revenue and upon rival interests concerned. The magnitude of such a task can be scarcely appreciated. Years would be required to reach a condition of relative stability once more.

The Interstate Commerce Commission, during the early years of its life, exercised without question authority in matters of classification. As illustrating this activity, the case may be cited of the classification of pearline, which was a rival, for cleansing purposes, of common soap. The manufacturers complained that from New York to Atlanta, as classified, the rate was 73 cents, while common soap paid a rate of only 49 cents. These were the different rates on fourth and sixth classes, respectively. After examination, the Commission decided that this discrimination was greater than the circumstances warranted, and they ordered that pearline be made fifth class, at a rate of 60 cents. In Europe such decisions are generally rendered by a tribunal in which the shippers are represented. In this country, it has been recently held by the Attorney-General that the validity of these powers, exercised by the Commission, is doubtful. Any right of supervision over the general scheme of classification is certainly denied, and the only power which can be exercised is that of dealing with specific rates as unreasonable, upon complaint.

The feasibility of a uniform classification, established under the supervision of the Interstate Commerce Commission, has been discussed by many witnesses before the Industrial Commission. Most of them, however, while recognizing the great advantage to flow from such uniformity, were inclined to the view that the practical difficulties peculiar to so large a country were insuperable. Under the railroad and canal traffic act of 1888, in England, a simple classification containing less than 2,000 articles was prescribed. The experience of that country can hardly be held conclusive, however, because geographical and industrial circumstances present none of the striking contrasts which exist throughout the vast territory of the United States. With-

out recommending arbitrarily the necessity for a uniform classification of freight in the United States, it seems that under the complicated system which exists at the present time there ought to be some public supervision and control. There is absolutely none at present, as will be shown in detail in a subsequent chapter, dealing with the powers of the Interstate Commerce Commission. The mere adoption of a uniform classification, as proposed in the Cullom bill, can accomplish very little, unless with this there be coupled the proper legislation for the enlargement of the powers of the Interstate Commerce Commission in respect to the control of rates.

VI. RAILROAD FINANCE AND FISCAL REGULATION.

PRESENT CAPITALIZATION.

According to established usage, railroad capital includes stocks, bonds, and other funded indebtedness of every kind. Current liabilities, however, are excluded; that is, railroad capital means railroad securities. The reason for classing bonds as well as stocks as railroad capital is thus clearly put by the statistician of the Interstate Commerce Commission in his first annual report, 1888:

> So far as bonds are concerned it may be said that although in form they represent a mortgage, yet in reality their issue was one means of collecting the capital necessary to create the property against which the mortgage lies. The stock, therefore, does not represent the entire investment, nor measure the full value of the property. For the full value of that property one must take account of both stock and funded debt.

Prior to 1896 the official statistics included current liabilities also in railroad capital, on the ground that the latter represented circulating capital, existing in the form of loans and bills payable, audited vouchers and accounts, wages and salaries due, and the like. In that year, however, this form of liability was excluded, at the request of the American Association of Accounting Officers. It seems proper, indeed, not to class current liabilities as capital, since they do not represent regular investments in the railroads. It will be noted that capital in the sense here defined represents the amount of investment, not the value of property. The term is used in a commercial rather than an economic sense.

Although bonds are thus classed with stocks as railroad capital, they differ from the latter in important respects. Bonds are certificates of indebtedness issued to persons who have made loans to a corporation; stocks are certificates of ownership issued to persons who have made investments in it. The stockholders are the owners of the corporation; the bondholders are the creditors. Bonds "represent a claim to an annuity and may be extinguished by the payment of the principal; while

stocks, being the legal evidence of proprietorship in railroad equipment must, in the nature of the case, be perpetual." It is more difficult, other things equal, for a railroad to float stock than bonds. Only a company known to be on a good paying basis can dispose of additional stock. It is much easier to get credit for new bond issues. This is because the bond represents a prior lien on the property. Interest on bonds has to be paid before dividends on stock can be declared. The proportion of stock to bonds, therefore, is one index of the financial status of an enterprise. In general, an increase of stocks at the expense of bonds is a healthy sign from the standpoint of the financier.

The total amount of railroad capital in the United States outstanding June 30, 1900, was $11,491,034,960. This represents an average capitalization per mile of line of $61,490. This total includes $5,845,579,593 of stock and $5,645,455,367 of funded debt. Current liabilities not included in the capital amounted to $594,787,870. Of the capital stock, $3,176,609,698 or 54.34 per cent of the total paid no dividends. This fact appears to show that American railroads, as a whole, are heavily if not indeed excessively capitalized. Over $3,000,000,000 of railroad securities brought no returns to the investors. This could not have happened had not stocks been issued far in excess of the actual value or the earning capacity of the railroads.

On the other hand, as outlined in an earlier part of this report, the conditions respecting the proportion of railroad capital now in receipt of regular dividend returns were far more satisfactory in 1900 than at any preceding time.[1]

The distribution of railroad capital among the different sections of the country is shown in the following table taken from the Thirteenth Annual Report on the Statistics of Railways for the year ending June 30, 1900:

Capitalization of railroads by groups.

Group.	Territory covered.	Total railway capital.	Per cent of total capital.	Per mile of line.	Per cent capital stock paying no dividends.
I	New England	$472,329,210	4.11	$61,246	19.33
II	North Central and Middle Atlantic	2,337,874,067	20.35	112,255	47.90
III		1,490,997,662	12.98	64,729	57.65
IV	Southern	631,863,020	5.50	57,684	69.92
V		903,681,993	7.86	42,707	60.12
VI		2,024,541,064	17.62	47,087	38.09
VII	Middle Western	560,763,313	4 88	51,952	16.85
VIII		1,395,350,728	12.14	60,324	61.64
IX	Pacific and Southwestern	511,034,132	4.45	44,378	91.08
X		1,162,599,776	10.11	78,806	82.66

It will be observed that the New England group of roads paid dividends on more than 80 per cent of the stock. The largest percentages

[1] See p. 269.

of stock paying no dividends are found in the Southern and Western groups. Roads in the North and Middle West occupied an intermediate position so far as dividend paying was concerned.

CAPITALIZATION OF DIFFERENT GROUPS.

There are as wide differences in capitalization between different individual railroads as between the territorial groups. The amount of capital per mile ranges from less than $10,000 in the case of numerous short lines to $653,846 in the case of the Philadelphia and Reading. The heavy capitalization of the latter and other anthracite roads is explained by the fact that they are large owners of coal properties. The amount of capital per mile, it should be observed, can not, moreover, be taken as a sure index of the financial condition of a road. By itself it means little. A high capitalization per mile does not necessarily indicate overcapitalization. Overcapitalization is a purely relative question. In order to determine whether capitalization is excessive, we must know something of the value of the equipment and terminals, the nature of the territory served, and the interest and terms of funded debt. A road with valuable holdings, having a large and growing volume of traffic drawn from a prosperous territory, and borrowing at low rates, can maintain without injury to the public a much higher capitalization per mile than a road in opposite circumstances. The latter may not be able to earn anything on a small capital, while the former may pay good dividends and yet give the public comparatively low rates. Thus, for example, the Chicago and Northwestern in 1900 has an average capitalization of $37,929 per mile, while the Atchison, Topeka and Santa Fe is capitalized at $57,251. The latter road, however, cost less per mile to build than the former, and, yet earns $1,747 per train mile, while the Chicago and Northwestern earns only $1,646. Again, the Boston and Albany at one time had a mileage capitalization of about $106,000; the Central Massachusetts, about $96,000. The lower capitalization of the latter is in this case certainly the more excessive on account of the relative unprofitableness of the territory through which the Central Massachusetts runs. All the New England roads are heavily capitalized, but most of them own valuable terminals and have an expanding business. The Kansas City, Pittsburg and Gulf has a capitalization of only $59,000 per mile, yet this is without question very excessive, as the road runs through a comparatively barren region. In some cases, then, a small amount of capital per mile represents actual overcapitalization, while in other cases a very large amount of capital per mile represents conservative financiering. The relative character of this question appears clearly from a comparison of the Lake Shore and the Nickel Plate. These two parallel roads had in 1899 practically the same capitalization per mile—the former

$102,000, the latter $98,000—yet the Lake Shore earned $15,300 per mile, the Nickel Plate only $12,000. The earnings of the former per mile are about 25 per cent larger than those of the latter upon substantially the same amount of capital. Compared on a basis of cost, the earnings of the Lake Shore are vastly greater.

COMPARISON WITH INDUSTRIAL COMBINATIONS AND BRITISH RAILWAYS.

The capitalization of American railroads compares favorably, in point of conservatism, with that of industrial corporations and also with that of British railways. Mr. Woodlock, railroad editor of the Wall Street Journal, testified before the Industrial Commission regarding the comparative capitalization of railroads and industrial combinations as follows:

There is no standard by which one can compare the two, but I do not hesitate for a moment to say that, comparing the average of all railroads of the United States with such companies as Federal Steel and Steel and Wire and other big concerns, the railroads are capitalized in an ultra-conservative manner; or, if you like to put it around, the others are capitalized up to the limit that the people that are expected to buy the stocks will take. You know there have been cases where the capitalization of some railroads has been absurdly low, and there has been a tendency in all such cases for these railroads to be reorganized in just a contrary fashion to that in which a railroad is reorganized when it is bankrupt.

The average capitalization of British railways is about four times that of the American roads. In the year 1898 the amount of capital per mile of the British railroads was $261,875. British railway companies make a practice of charging expenditures for improvements to capital rather than to revenue. The fact that the British railways are capitalized far more per mile than the American can not, of course, be assumed, without further inquiry, to prove that the capitalization of the former is excessive and that of the latter conservative. But it does indicate that the policy of American railroads in this respect is not so exceptional as it has sometimes been represented to be.

INCREASE OF CAPITALIZATION.

During the last decade railroad capital increased from $9,437,000,000 in 1890 to $11,491,000,000 in 1900. The amount of capital per mile increased from $60,340 to $61,490 in the same time. The course of this development is graphically shown in part by the accompanying diagram. The figures taken from the report on the Statistics of Railways are not, however, strictly comparable; for previous to 1896 current liabilities were included in railway capital, and thereafter not. The amount of stocks and bonds was $8,533,000,000 in 1890, rising to $10,746,000,000 in 1900. A comparison of the percentage of increase here with that of mileage during the same period will show to what

extent the addition to capital may be attributed to construction of new lines. The total railroad mileage, it appears, rose from 163,597 miles in 1890 to 193,345 in 1900, an increase of about 18 per cent. The increase of stocks and bonds, as shown above, amounted, however, to over 25 per cent. Capital has increased, therefore, considerably faster than mileage. This shows that a large part of the new capital is to be explained as coming from reorganizations of railroad properties, by which additional securities have been issued without withdrawing proportionate amounts of old stock.

For two years of the last decade—1891 and 1900, respectively—the increase of capitalization has been especially noteworthy. In the former year $397,000,000, representing $2,446 per mile of line, were added to railroad capital. This remarkable increase, it should be observed, took place at a time when there was no marked activity in railway construction. The statistician of the Interstate Commerce Commission in his report for 1892 commented upon its significance as follows:

> It was found that a larger proportion of the increase was due to reorganization and to the issue of securities for the purpose of investments in the stocks of subsidiary lines. Quite a number of cases were discovered, however, which could not be explained in harmony with sound financial principles from any data presented in the reports. It is believed that a close investigation would bring to light a looseness of method not in harmony with public interest.

In the year 1900 there was an increase of $457,000,000 in railroad capital. Of this amount not over $120,000,000 can be assigned to new construction, as only 4,051 miles of new line were built during the year. This leaves $337,000,000 to be explained in other ways. Official statistics report the increase of capitalization for 1900 over the preceding year to amount to $1,147 per mile of line. The increase which set in so heavily last year still continues. Among new issues of securities made or contemplated, the Railway World of March 23, 1901, mentions the following: Pennsylvania, $100,000,000; Union Pacific, $40,000,000; Erie (coal bonds), $32,000,000; Reading, $23,000,000; Great Northern, $20,000,000; Baltimore and Ohio, $15,000,000; Burlington, $9,900,000; St. Paul, $8,800,000. The total issues for the first half of the year throughout the country probably exceeded $300,000,000. For a parallel to this recent expansion of securities it would be necessary to go back to the great inflation of the early eighties, when in five years—1879 to 1884—$3,360,000,000 of new railroad securities were listed. The recent enlargement of railroad capital has taken place almost entirely through reorganization and consolidation of existing roads. It is pertinent to inquire, as we have done in a later part of this report, whether the great increase of capitalization which has taken place is likely to entail an additional burden on rates, in order to pay interest and dividends on the new securities. This policy

exposes the companies to the temptation to put up rates unduly, at the same time renders such action more easily possible sin eliminates competition, the only check upon the rates.

STOCKS VERSUS BONDS.

The proportion of stocks in the railroad capital of the countr increased markedly during the last decade. In 1890 the amou stock was less than that of the funded debt, being only 46.73 cent of the total capitalization (including at this time floating d while bonds equalled 48.47 per cent. In 1900 the stock exceede funded debt, having increased to 50.87 per cent of the total capit tion (excluding floating debt), bonds being 49.13 per cent.

The first railroads in the United States were built on stock. A bonds that were issued were debentures, as is still the practice in land. In 1855 the total amount of stock issued up to that date exce that of bonds by 42 per cent. This condition existed everyw throughout the country except in the West, where the bonds we excess. The proportion, however, was reversed during the decade 1855 to 1865, when speculation was rampant and railroads were exte rapidly with little regard to economy of construction. Building bond issues prevailed. Then came the panic of 1873, with the r that nearly $500,000,000 of bonds were defaulted. Bonds continu preponderate until after the reorganizations of railroad property i years 1893 to 1897, which aimed to reduce fixed charges by subst ing stocks for bonds. Fifty-seven companies, reorganized during period, effected a reduction of fixed charges to the amount $19,600,000. Thus, Atchison in 1895 cut its fixed charges by $4,185,0 Northern Pacific in 1896 by $4,755,000. Prior to 1895 the an increase in railroad capital had shown usually a large preponderanc bonds. During 1895 a change took place, stocks increasing dur that year $127,000,000 and funded debt only $28,000,000. For year 1896 stocks increased $265,000,000, while funded debt actu decreased $45,000,000. The next year, for the first time in the r road history of the United States, the amount of stock outstand exceeded that of the entire funded debt. For the year 1900 increase in stock was more than two and a half times as great as increase in funded debt; but, as the statistician of the Interstate Co merce Commission remarks, this can hardly be interpreted as a healt ful tendency, since the increase in indebtedness alone exceeded t probable cost of railroad construction during the year.

The policy of railroad management of late years has been, in gener to secure new capital by issuing additional stock instead of increasi funded indebtedness. Recent stock issues by the Great Northern, t Pennsylvania, the Burlington and the St. Paul, furnish illustratio

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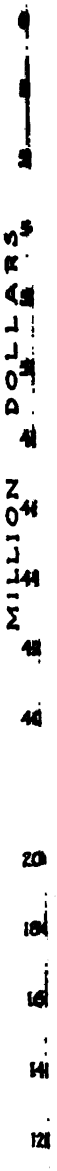

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Debenture bonds have been issued by the Union Pacific and the Baltimore and Ohio which are convertible into common stock. Very recently, however, some roads have substituted bonds for stocks at exceedingly high valuations as compared with previous standards. According to estimates made by the Commercial and Financial Chronicle, $367,000,000 of stocks have been withdrawn recently and replaced by $559,000,000 of bonds. On an average more than $150 in bonds has been substituted for $100 in stock. This substitution not only increases railroad capitalization at the rate of over 50 per cent but necessitates payment of interest on the bonds issued, if the companies are to keep out of the hands of receivers.

The proportion of stocks varies widely in different sections of the country. Thus in New England stocks constitute 60.74 per cent of the total railroad capital; in the South, 41.21 per cent; on the Pacific slope, 58.58 per cent. The preponderance of stock in parts of New England is the result of public control of the issue of railroad securities through railroad commissions. Although stocks exceed bonds on the Pacific slope, the amounts of both kinds of securities that have been issued are excessively large. In general, with the exception of New England, bonds are still outstanding to a larger amount than seems consistent with conservative management. The differences between railroads in respect to relative amounts of stocks and bonds are very striking. The Boston and Albany, for example, has 76 per cent of its capital in stocks; the New York Central only 35 per cent; the Reading 22 per cent; the Schuylkill and Lehigh less than 5 per cent.

DISTRIBUTION OF STOCKHOLDINGS.

It is a fact often lost sight of that railroad securities are not owned exclusively by a few millionaires, but by a great number of investors scattered throughout the country. The majority of the securities in the case of many roads may be concentrated in the hands of certain large holders; but the remainder is widely distributed among numerous small investors. The entire amount of stock of some roads is held only in small blocks. The largest stockholder of the Boston and Albany, for example, owns only 3,000 shares; no fewer than 4,645 persons own less than 10 shares each. The share-owners of the Eastern trunk lines are reported to number 99,826. In the case of one road 50 per cent of the share-owners are women. It was estimated in 1897, by the late George R. Blanchard, that the total number of holders of stocks and bonds of the railroads of the United States was 1,250,000, including 950,000 stockholders and 300,000 bondholders.

American railroad securities are owned very extensively throughout Europe. In the Yale Review for November, 1900, Mr. Nathaniel T. Bacon presents some approximate estimates of the amount of these

foreign holdings. The total investments of the leading foreign countries in United States securities on January 1, 1899, he figures as follows:

England	$2,500,000,000
Holland	240,000,000
Germany	200,000,000
Switzerland	75,000,000
France	50,000,000
Rest of Europe	35,000,000

These make up a total of $3,100,000,000, of which all but a comparatively small amount is invested in railroad securities. The list of German holdings of American securities managed from Frankfort is interesting, as showing where these investments are placed.

Estimates of German holdings of American securities.

	Market value.	
Central Pacific	$12,000,000	to $15,000,000
Southern Pacific	15,000,000	17,000,000
Northern Pacific	20,000,000	25,000,000
Missouri Pacific	2,000,000	3,000,000
Union Pacific	2,000,000	3,000,000
California Pacific	3,000,000	4,000,000
Oregon Railroad and Navigation	1,000,000	2,000,000
Erie	2,000,000	3,000,000
Pennsylvania Railroad and Baltimore and Ohio Railroad		1,000,000
Louisville and Nashville		1,000,000
Chicago, Milwaukee and St. Paul	7,000,000	8,000,000
Chicago, Burlington and Quincy	2,000,000	3,000,000
Illinois Central	7,000,000	8,000,000
Rock Island		1,000,000
Denver and Rio Grande	3,000,000	4,000,000
Houston and Texas Central		2,000,000
Pittsburg, Cincinnati, Chicago and St. Louis		2,000,000
Western New York and Pennsylvania		1,000,000
Total		105,000,000

The investment of foreign capital in American railroads began very early. European investors bought our railroad securities eagerly until the panic of 1873 brought a sharp check to investment of foreign capital in this country. The amount of railroad securities held abroad at that date was estimated at $375,000,000. After the recovery from the panic, foreign investment was resumed and continued until it was interrupted again by the panic of 1893. A large amount of foreign-owned securities was unloaded at that time. It is to be noted, furthermore, that the heavy balance of merchandise trade in favor of the United States has caused some drain of American securities from Europe. But, on the other hand, there have been recent large investments of European capital in this country. The chairman of the London and Westminster Bank declared at the last annual meeting that

English investors were again buying actively in the American stock market. In 1890, he stated, 33 per cent of the advances made by his institution upon various securities were upon American holdings; now the amount is 48 per cent. The total extent of foreign investment in American railroads is probably little, if any, less at the present time than it was in the years immediately preceding the panic of 1893.

NATURE AND METHODS OF STOCK WATERING.

Stock watering may be defined—without regard to the question of the justifiability or culpability of the practice—as the issuing of securities that do not represent money invested in the property. "Water" includes all that is put into the property except actual money. The object of making such fictitious additions to capital stock may be either to secure an initial profit by selling new stock to investors, or to conceal the regular profits of an undertaking by reducing the nominal rate of dividend. The latter motive is more frequent. When a road is doing a profitable and expanding business and paying large and growing dividends, its stock rises on the market, the advance registering the increasing value of the property. Under such circumstances the company may, by issuing additional stock, keep down the rate of dividend, prevent the price of the stock from going up excessively, and thus cover up the true extent of the road's profits. To illustrate, a company with a capital stock of $5,000,000, paying a 12 per cent dividend may, by doubling the stock, reduce the dividend to 6 per cent and continue distributing to the stockholders the same amount of net revenue as formerly.

Opinions differ as to the general expediency and justifiability of the latter course. The weight of opinion, however, is against the policy. Mr. T. L. Greene, a recognized authority on corporation finance, testified before the Industrial Commission that "It is a great deal better for a road to pay high dividends than it is for it to water its stock," for the reason that if dividends are increased they can later be reduced in bad times, while if the capitalization is enlarged, and only a 4 per cent dividend rate paid, a later reduction will cause trouble. The main objection to the practice of stock watering is that it tends to raise or keep up passenger and freight rates. It furnishes also an argument against the demands of labor for higher wages. The permanent burden of the heavier capitalization makes it less likely that the public will be given the benefit of reduced charges as the business develops. This question of the relation of capitalization to rates will be considered later.

Methods of inflating capitalization are various. Formerly sheer fraud was often practiced in issuing stock for speculative purposes. Between 1868 and 1872, for example, the share capital of the Erie

Road was increased from $17,000,000 to $78,000,000 for the purpose of manipulating the market. This action led the Board of the New York Stock Exchange in 1869 to refuse to quote the Erie shares. Another fraudulent device consisted in paying excessive sums to dummy construction companies, composed of members of the railroad company and their friends. For instance, the original Southern Pacific road cost actually only $6,500,000; although it is a matter of record that $15,000,000 was paid a construction company, and the bankers' syndicate, which financed the road, received $40,000,000 in securities, or an average of $6 in bonds and stock for each dollar of actual cost. The same thing happened in connection with other Pacific roads. It was also not uncommon for directors of railroad companies to purchase other railroad properties and then sell them to their own company at excessive prices. Again, stock has in many instances been given away by railroad companies simply as a bonus to bait purchasers of the bonds which the concerns were trying to float. It is well known that the New York Central, Erie, Reading, St. Paul, Chicago and Northwestern, gave away in this manner a portion of their earlier stock issues. These flagrant methods of stock watering have been largely discontinued during recent years.

The principal methods of stock watering still employed are the following:

1. The commonest is the payment of so-called stock dividends to shareholders. "These consist either of an outright bonus of new shares of stocks or bonds, or in a mitigated form, of stocks sold below par or at less than market quotations." Examples are the 80 per cent stock dividend of the New York Central, in 1868; the Reading scrip dividends between the years 1871 and 1876; the Chicago, Burlington and Quincy and Atchison stock dividends of 20 per cent and 50 per cent, respectively, in 1880 and 1881; and the famous Boston and Albany distribution of State stock in 1882.

2. Consolidation of railroad properties offers opportunities to increase capital surreptitiously in various ways. (*a*) One is through the issue of new stock to defray the entire expenses of betterment of the operating plant. (*b*) Sometimes, again, the constituent companies are gerrymandered so that the successful concerns with surplus earnings are combined with roads less favorably situated, thus making it possible to distribute earnings at a comparatively low dividend rate. (*c*) The third device connected with consolidation consists in substituting a high-grade for a low-grade security. A weak company, whose stock is quoted, say, at 50, may be merged in a second corporation whose stock stands at 100. The latter may then issue new stock worth $100 in exchange for the $50 stock, share for share.

3. A third method is the substitution of stock issues for funded debt. It has the advantage of giving great elasticity to future divi-

dend possibilities. The substitution of 8 per cent stock for 4 per cent bonds facilitates the absorption of increasing earnings in the future. The stocks also permit of cessation of dividends during periods of depression. The substitution of stock for bonds in this way is not, however, so harmful to the public interest, provided the stock issues are subject to control by State commissions.

4. Another expedient for increasing capitalization is the funding of contingent liabilities. Large amounts of such liabilities, in the form of bills payable, wages and salaries due, and the like, may be covered by issues of interest-bearing scrip. This is unquestionably bad financiering, as floating debts should, in general, be provided for out of earnings.

An excellent illustration of inflation of capitalization is furnished by the recent reorganization of the Chicago and Alton Railway Company. The old Alton management was extremely conservative. The stock had never been watered, and represented, before the recent deal, less than the probable cost of duplication. The company was capitalized at about $30,000,000, including $22,000,000 of stock and about $8,000,000 of bonds. It had a net earning capacity of $2,900,000 a year, paying regular dividends of 7 or 8 per cent on its common stock. In 1899 the road was bought by a syndicate, which paid $175 a share for the common stock and $200 a share for preferred stock, making a total cost to the purchaser of $40,000,000 for the $22,000,000 of stock. The road was recapitalized at $94,000,000, or $54,000,000 of bonds and $40,000,000 of stock. The new bonds were floated at 3½ per cent. The fixed charges of the road as reorganized amount to $1,963,000 per year. On the basis of the former earning capacity of the road, which averaged considerably more than $3,000 net per mile, it is estimated that the company will have no difficulty in earning its fixed charges and paying a dividend on the preferred stock. The increase of capitalization in this case is defended on the ground that the road will not have to earn any more than formerly in order to pay interest and dividends on the new capital. It seems clear, however, that the doubling of the capital stock and the increasing of the bonded debt nearly sevenfold must impose a burden upon the rates that will tend to prevent any reduction which might otherwise naturally take place, and afford a convenient reason for refusing to advance wages.

This subject of stock watering leads naturally to the discussion of the proper basis of railroad capitalization, which will be considered next.

BASIS OF CAPITALIZATION.

ORIGINAL INVESTMENT.

The popular theory on this subject is that capitalization should be based on the original cost of the property or the actual investment of capital in the enterprise. The stocks and bonds should represent money paid in. It is contended that investors are entitled to fair returns upon this amount, but to nothing more. Opposed to this theory held by the public is another, advocated by most of the representatives of corporate enterprise, that the proper basis of capitalization is earning power, regardless of the amount of capital invested. Thus, for example, if a company is earning $50,000 per year it may, according to this second theory, properly be capitalized at $1,000,000, assuming a 5 per cent rate of profits as a basis.

The proposition that capital be limited to the real investment seems, on first examination, to be a fair one, but further reflection will show that there are certain objections to such a rule. In some cases the actual amount invested in the enterprise would give too high and in other cases too low a capitalization. This basis would give too high a capitalization in cases where the original cost, on account of high price of labor, high rate of interest, incompetence of management, or other causes, had been much greater than would be the present cost of building the road. Another factor has been cogently stated in a recent case—

> The State can not permit the capitalization of dishonesty, extravagance, or incompetence, nor can it permit the burden of obsolete industrial processes or administration to be laid on future generations.

It is unquestionable that in the case of many Western roads capital was recklessly squandered in the process of construction. The basis of original cost would give too low a capitalization in the case of roads which have been compelled, in the interest of unity and efficiency of service, to make heavy expenditures for the purchase of competing or contributing systems. It may be remarked in this connection that the common tendency is undoubtedly to underestimate the cost of railroad construction. The average cost has sometimes been asserted to be only about $10,000 a mile. Again, it is frequently said that all the railroad capital of the country in excess of $30,000 per mile represents water. This, however, is certainly not true. The cost of construction of a trunk line, with a thorough equipment, may average more than $50,000 a mile. In the majority of cases the original cost would furnish too narrow a basis for capitalization. Thus in the case of the Illinois Central, the appreciation in value of its land grants represented in part the enterprise of its original promoters, as well as the risks which they incurred in building the road. It is in the interest of

the public, as well as the railroads, that the latter should secure some returns from new economies in management; otherwise there would be no stimulus to saving. The public has no legitimate claim to all gains resulting from economy in the refunding of indebtedness and in the operation of the roads. It seems not unreasonable that skillful management should be capitalized to some extent.

EARNING CAPACITY.

The preference of railroad financiers for earning capacity as a basis of railroad capitalization is easily understood. Capitalization on this basis enables a road to conceal the extent of its profits and to absorb increasing revenue without incurring public displeasure and arousing agitation for lower rates. Furthermore, a company that is highly capitalized can usually be sold to better advantage than one with a low capitalization. As has been observed, people seem to like to deal in large figures, and the average investor prefers to buy 200 shares of stock quoted at 50 and paying, say, 3 per cent, than 100 shares of stock quoted at par and paying 6 per cent. A large capitalization, therefore, is thought to confer some advantage for purposes of sale.

There are two legitimate arguments which may be advanced in favor of capitalization on the basis of earning capacity. One is that—

> in no other way can the risks incident to the novel enterprise, repelling timid capital, be overweighted by possible profits through premiums in the form of securities purchasable at discount.

This argument does not hold, however, in the case of railroad undertakings that involve no real initial risk; and it is probably true that the element of risk in most railroad enterprises projected in recent years is very inconsiderable. The second argument is more weighty. It is contended that a quick capital, in the form of credit or cash, is needed for the profitable operation of any plant. As stated—

> Without such working capital the plant, not being a "going" concern, loses much of its value. Consequently, it is urged, capital in excess of the value of the plant may rightfully be created for this purpose by the sale of stocks or bonds.

The force of this argument is considerably qualified by the consideration that a railroad corporation possesses a valuable franchise, attachable for debt, which seems to give sufficient security to enable it to obtain working capital by the ordinary means.

The chief objection to capitalization on the basis of earning capacity is that it obscures the relation between rates, wages, and profits. It is impossible to discover, without a careful appraisal of the property, whether an overcapitalized road is earning more than a fair return upon the investment. The principle is generally accepted at the present time that capital is not entitled to more than a certain fair rate of profits. The issuance of additional securities on the basis of increasing earning

power makes it possible for a company covertly to secure exorbitant returns on the actual investment. This objection seems conclusive against the policy of full capitalization up to the limit of earning power.

COST OF REPRODUCTION.

Neither original cost nor earning power, then, furnishes an entirely satisfactory basis of capitalization. As a substitute, cost of reproduction has been suggested, and in some cases applied. By this is meant simply the actual cost of laying down the roads at the present time, including proper allowance for value of terminals and right of way. Whether the present capitalization of American railroads is in excess of the probable cost of reproduction is disputed. By some it is asserted that railroad capital is much greater than the cost of constructing the roads at the present time. By others it is declared to be actually less.

Cost of duplication is observed as the rule for determining fair capitalization by the Massachusetts Board of Railroad Commissioners. The principle has also been laid down by the courts in certain cases, notably in the Minnesota case of the Great Northern Railway Company, 1896. The question involved in this case was the reasonableness of the rates for some lines of the Great Northern system as fixed by the State Railroad and Warehouse Commission. The company appealed to the district court, which thereupon reversed the order of the commission. Appeal was taken from this decision to the State supreme court, and the case was ordered back for a new trial. The opinion of the court is valuable for the clear definition which it gives of the proper basis for the determination of rates, and hence of capitalization. The facts of this case were, briefly, as follows: The lines of the Great Northern Railway in question were owned by other roads until 1879. In that year they were sold to the St. Paul and Manitoba Company at foreclosure for $3,600,000, which was far below the real value. The new company operated the lines until 1890, increasing the stock to $20,000,000 and the bonds to $84,558,484. In 1890 all the lines of this company were leased to the Great Northern Company, the latter guaranteeing payment of the principal and interest of the bonds and 6 per cent on the stock. In contesting the rates prescribed by the State commission, counsel for the Great Northern argued that the amount of the present fixed charges of the company should determine what was a reasonable revenue to be derived from operating leased lines. The Attorney-General contended in opposition that the price at which the properties had been sold at foreclosure should be taken as the basis for fixing rates. The court held:

In our opinion both positions are wholly untenable. If the Manitoba Company and its promoters bought the properties at foreclosure, as well as at a great sacrifice, that is their good fortune; if the lease of the system by the Great Northern Railway Company turns out to be a bad bargain, that is its misfortune. The patrons of the

road should not gain by the one transaction or lose by the other. There is as much reason why the public should bear the loss of the bad bargain as there is why it should take the profits of the good bargain. To adopt any such principle would leave the public at the mercy of every railroad manipulator and offer a premium on all kinds of schemes for increasing fixed charges of railroads. Again, in determining what are reasonable rates, it is perfectly immaterial whether the railroad is mortgaged for two or three times what it would cost to reproduce it, or whether it is free from incumbrances. To hold otherwise would be to hold that the State or the public have indirectly guaranteed the payment of the mortgage bonds of every railroad.

The question of rates, in the opinion of the court, was to be determined "by ascertaining what, under all the circumstances, is a reasonable income on the cost of reproducing the road at the present time." The court instituted an inquiry to determine this, and decided that $14,000,000 would reproduce the terminals and $30,000,000 the rest of the road. A lower rate of interest was allowed to the amount representing the cost of reproducing the terminals than to the rest of the property, on the ground that the terminal property was likely to go on increasing greatly in value. It was held, finally, that the income of the road, with the rates as reduced by the commission, would produce 2½ per cent net income on the cost of reproducing the terminals and 5 per cent net income on the cost of reproducing the rest of the road, and that under the circumstances this was a fairly liberal return. The order of the lower court was therefore reversed.

It is interesting to contrast with this Minnesota case the Texas Railroad Commission case decided by the United States Supreme Court in 1898. This decision annulled certain rates which had been fixed for the Houston and Texas Central by the Texas Railroad Commission, on the basis of estimated cost of reproduction of the road. The court ruled that the commission had underestimated the value of the property, having made no allowance for its favorable location, and that

in view of the advance of prosperity in the country through which it runs, and the increment to its value due to the settling, seasoning, and permanent establishment of the railways, and to the established business and good will connected with its business, which has been established through a long series of years, all of which ought reasonably to be considered in fixing the value of the property and the capitalization upon which it is entitled to earn and should pay some returns by way of interest and dividends.

According to this decision the cost of reproduction, strictly defined, is inadequate as a basis of railroad capitalization. It fails to take account of certain elements which should be considered in estimating the real value of railroad property and the amount of return to which it is fairly entitled.

COMBINATION OF FACTORS IN CAPITALIZATION.

It would seem that a fair basis of capitalization is to be found only by taking into consideration both cost of reproduction and earning capacity. The United States Supreme Court, in the case of Smythe *v.*

Ames, has decided that the following items should be considered in estimating the value of railroad property: The original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses. The Nebraska Maximum Freight Rate Case also bears directly upon this issue.

A valuation of railroad property, with regard to both cost of reproduction and earning capacity, was undertaken recently by the Board of Tax Commissioners of Michigan. The commission undertook, first, to appraise the physical properties of the roads, and, second, to appraise what might be termed the nonphysical elements in their value. In appraising the physical properties the cost of reproduction was taken as a basis. This was determined by a thorough survey of the roads, made by experts. The nonphysical elements of railroad property, which constitute what is usually called the franchise value of railway corporations, were valued according to a plan devised by Prof. Henry C. Adams.[1] This value was determined (1) by deducting aggregate expenses of operation from gross earnings and adding the income from corporate investments; (2) by deducting from the total income thus obtained an amount properly chargeable to capital—that is, a certain per cent on the appraised value of the physical properties—rents paid for the lease of property operated and permanent improvements charged directly to income; (3) by capitalizing the remainder at a certain rate of interest. Exceptions from this procedure were made in the case of particular roads peculiarly situated. This method of valuation would seem to give the true basis of capitalization, which would then represent both the cost of reproducing the property and the franchise value arising from surplus earning capacity. Such a valuation of railroad property is useful for purposes of both taxation and of rate making. It is to be noted that the Michigan plan allows a higher rate of return on the nonphysical property than on the physical property. The commission fixed the annuity on the former at 6 per cent after deducting 1 per cent for taxes, and on the latter at 4 per cent. It seems desirable that a similar valuation of railroad property should be undertaken in other States; although Michigan itself has not as yet acted upon the recommendations of the Commission.

CAPITALIZATION AND RATES.

The relation of capitalization to rates is a much-debated question. Opinions differ as to whether overcapitalization results in an increase of freight and passenger charges. Hon. Martin A. Knapp, Chairman of the Interstate Commerce Commission, testified before the Industrial

[1] Reports Industrial Commission, Vol. IX, pp. 373–386.

Commission that he had not seen an instance in which rates seemed much to depend upon or be influenced by the capitalization of the road. Capitalization, he held, cuts no figure in the rate question. He admitted, however, that when the reasonableness of a particular rate was called into question, capitalization had to be considered in determining what the road in question ought to charge. In deciding upon the reasonableness or unreasonableness of a road's charges the Interstate Commerce Commission takes into consideration its financial condition. If a road is embarrassed with fixed charges of large amount, a rate may be justifiable which would be altogether unreasonable in the case of a road with only slight incumbrances of indebtedness.

Mr. T. L. Woodlock, a witness before the Industrial Commission, also maintains that rates are not affected by overcapitalization. Capitalization, he declares, has no bearing whatever on rates or earnings. It is a resultant of forces, and not a force itself. Similarly, Mr. H. T. Newcomb, then chief of the Division of Statistics of the United States Department of Agriculture, is of the opinion that stock watering has no material bearing on rates. In support of this opinion the general fact of the heavy decline in railroad rates since 1870 is cited. Mention is also made of particular roads which have increased their capitalization and at the same time reduced rates. The New York Central has increased its capitalization since 1892 from $202,000 to $348,000 per mile, yet rates have steadily declined. On the other hand, the Southern Pacific has a remarkably low capitalization of only $18,000 per mile, yet its rates are so high as to arouse public antagonism.

It may be conceded upon this point that fixed charges and dividends do not directly affect rates. The main consideration in the adjustment of railroad charges is the development of traffic. The cost of service enters in only so far as the actual expense of hauling goods constitutes a minimum below which rates are not reduced. Above this minimum, rates are determined by the possibility of developing traffic. "Thus," observes President Hadley in his Railroad Transportation, "there has gradually grown up a system of rates favoring certain classes of goods, certain localities, or certain individuals. It was found that by lowering rates for cheap goods a large traffic was developed. It was found that by lowering the rates at competitive points large traffic might be secured which would otherwise come by other routes. It was found—at any rate it appeared—that by lowering rates to certain individuals a road increased its returns better than by a general lowering of rates. This constitutes the system of charging 'what the traffic will bear.'" The reason why fixed charges are practically ignored in arranging rates is that these go on substantially unaltered, whether the amount of traffic is small or large. If a road rejects traffic that can not be made to pay an amount necessary to cover its full percentage of fixed charges, it gains nothing in reduction of these charges and loses a

certain amount of revenue. It pays a road to take traffic at anything above the mere cost of hauling the goods—that is, the amount of operating expenses that would be saved if the traffic were not taken. Acceptance of traffic even at rates only slightly above the actual cost of hauling the goods brings in something toward the payment of fixed charges. This consideration is the basis of the contention that capitalization has no direct influence upon rate making.

But indirectly capital does have some connection with rates. In the long run excessive capitalization tends to keep rates high; conservative capitalization tends to make rates low. Rates, as we have seen, are governed by "what the traffic will bear." An important element in determining what the traffic will bear is the pressure of competition, where this exists. Two kinds of competition are to be distinguished here, which have been termed, respectively, direct and indirect competition. Direct competition is that between lines covering the same territory or connecting the same terminals; indirect competition takes place between roads having no territory in common but serving producers who are competing for the supply of the same markets. "Strictly speaking," as pointed out by Dr. Weyl in a recent paper on the subject, "permanent competition can exist not between railroads struggling for the same traffic, but solely between those railroads which have no territory in common. Given two railroads which tap a given circumscribed wheat area in Dakota, and however bitter and fierce the struggle for patronage may temporarily be, the inevitable result is the adoption of a modus vivendi which places rates upon a permanent basis. But Dakota wheat enjoys no monopoly, and the freight rates on these roads must be low enough to allow the Dakota farmer to compete with the farmers of Nebraska and Kansas. In consequence the freight charges on Kansas and Nebraska roads will determine a maximum above which the Dakota railroads can not permanently charge. The same fact is true of foreign competition. Our wheat roads must compete not only with those in Canada, but with Indian, Russian, and Argentine railroads, as well as with enormous maritime agencies all over the world." This sort of indirect competition in the distribution of products puts a certain check upon rates, even where direct competition is entirely absent. Where competition of either kind exists, rates are not dominated by the amount of capitalization. But competition in either form is not always present. Where it is absent, overcapitalization with high fixed charges and dividend requirements may lead to the raising of rates above the amount that would give reasonable returns upon the actual investment.

High capitalization tends, moreover, to keep up rates by preventing voluntary concessions which might otherwise have taken place. A company paying high dividends may find it expedient to lower its

rates in order that the appearance of exorbitant profits may not excite a hostile public opinion. But if returns from excessive rates can be distributed in dividends on watered capital, the public is not aroused to demand reductions. High capitalization, therefore, has at least an indirect bearing on rates. The amount of railroad capital is not to be regarded as a matter of no concern to shippers.

PROMOTERS' AND BANKERS' PROFITS.

METHODS OF PROMOTION AND UNDERWRITING.

Heavy capitalization is, without question, injurious to the interests of investors and the public at large; but to promoters and bankers it opens opportunities for great gains. The promoter is a person who formulates the plan for the formation of a new corporation or combination and induces the different companies concerned to accept the terms proposed. The practice is generally the same in the case of industrial corporations and combinations as in the case of railroads, This subject is treated also in the report on Industrial Combinations in this volume. The ordinary method of procedure is for a promoter to secure from the various companies which are to be consolidated options of purchase at fixed sums upon each plant. Then a new company is organized with a capitalization of possibly double the amount of the options. The companies are paid either in cash or in preferred stock of the new corporation, with perhaps some common stock thrown in as a bonus. The remainder of the capital stock then goes to the promoter as pay for his services in effecting the consolidation. In a word, promoters' profits come from watered stock. The extent of the promoter's gains in such a case depends upon his success in selling the new stock to the investors. Here the banker comes to the assistance of the promoter. The latter induces some financial interest to underwrite the stock of the new company. The underwriter agrees to negotiate the sale at a given price for a certain amount of stock. If the banker succeeds in selling all the stock within the specified time at a price as high as that fixed in the contract, he has no further responsibility in the matter; if not, he is obliged to take the unsold stock himself. In some cases, again, underwriting takes the form of a guaranty by a banking house of the payment of bonds issued by a company. The banker, of course, demands large pay for his services, either in the form of commissions or of stock. Often the work of both promoter and financier is performed by the same individual or firm.

EFFECT ON INVESTORS.

The operations of promoters and financiers have introduced an element of speculation into the dealings in new securities, and from this

source have arisen serious evils. The two classes named secure their profits from the first sale of the stocks rather than the future earnings of the combination. It is for their interest, accordingly, to induce investors to buy the stocks at the highest possible prices. The larger the amount of stock which they can unload, and the higher the prices which they can get, the greater are their profits. In order to create a demand for the stock the condition of the business may be misrepresented in the prospectus issued.

METHODS OF PROTECTING INVESTORS.

The existence of these evils raises the question whether some measure can not be devised for the protection of investors against the speculative manipulation of railroad and industrial properties. One remedy might be found in legislation similar to the English Companies Act of 1900. This act aims to secure publicity and to enforce responsibility in the organization and management of corporations. It provides that a copy of every prospectus issued by any intended company shall be signed by every person who is named as a director, or proposed director, and shall be filed with the registrar of corporations. The prospectus, moreover, must state the nature and extent of the interests of the holders of the property, the salaries to be paid to directors, the names of the vendors of the property and the amounts payable in cash, shares, or debentures; the amount payable to any promoter as commission, and the nature and extent of any interest of any director in the property and the amount to be paid to him for this interest for its promotion. Furthermore, a statutory meeting of the stockholders must be called at a time not less than one month and not more than three months after the company is entitled to commence business, and seven days before such meeting a report must be sent to every member of the company stating the number of shares allotted, the amount of cash received for them, and sundry other particulars as to the condition of the company. No company is allowed to commence business until every director has paid in cash, on each of the shares taken or contracted to be taken by him, a proportion equal to that payable on allotment on the shares offered for public subscription. It is also required that within one month after allotment a statement shall be filed with the registrar giving particulars of any contract under which shares are to be given for any consideration except cash. Finally, if any person in any report, balance sheet, or statement to shareholders, makes a willful misstatement, he is declared guilty of a misdemeanor and liable to imprisonment not exceeding two years. These are the main provisions of the new act for regulating the formation of corporations in Great Britain. It is appropriate to consider the expediency of similar legislation in the United States as a remedy for abuses connected with promoting and financiering.

STATE SUPERVISION.

The recent marked tendency on the part of railroad companies to increase their capitalization brings into prominence the question whether the issue of stock and bonds should not be controlled by law. In the year ending June 30, 1900, additions to railroad capital, as previously stated, amounted to $457,080,062. For the three years 1898–1900 the total increase of capitalization was $856,026,886. Recent large issues of stock and bonds by various companies show that the movement to increase capitalization still continues. It appears from these facts that whereas during the earlier years of the last decade the railroads were growing up to their capitalization—chiefly through the increase in value of right of way and terminal facilities,—of late the companies have been extending capitalization beyond the limits that would be fixed by a reasonable valuation of their physical properties.

POLICY OF MASSACHUSETTS.

The policy of Massachusetts with reference to railroad corporations is not without interest in this connection. This policy was defined and developed by the Board of Railroad Commissioners, established in the year 1869. The Massachusetts commission, as is well known, has only advisory powers. It can merely investigate, report, and recommend; but the recommendations of the commission have uniformly been marked by such wisdom that they have commanded the respect of the corporations. The aim of the Massachusetts policy is to limit capitalization to the amount of investment and to secure publicity of operation. The issue of railroad stock simply as a bonus to promote the sale of bonds, which are in themselves sufficient to cover all expenses of construction, has not been tolerated in Massachusetts. To a great extent the roads of this State have been built by sales of stock instead of bonds. The stock, moreover, has usually been sold in the beginning at a fair percentage of its par value. As a result, with the development of the roads, the stock has risen steadily above par instead of merely rising toward par, as is the case when stocks are issued as a bonus to bond purchasers. When the more prosperous roads began to make frequent applications for permission to issue additional stock, in order to keep pace with the rising value of the property, an agitation against stock watering resulted, which led to legislation for the definite control of capitalization. The anti-stock-watering laws that were enacted applied not only to railroad corporations, but to other public service companies as well. The most important provision governing stock issues by the railroads is contained in chapter 350 of the Acts of 1894. This act provides that no railroad corporation or other public service company shall declare any stock or scrip dividend, or

divide the proceeds of a sale of stock, or scrip, among its stockholders, or create any additional stock or issue certificates thereof to any person unless the par value of the same shall be paid in cash to the treasurer.

This Massachusetts plan of limitation of capitalization has worked admirably in practice. It has tended to promote the improvement of railway property through the expenditure of earnings, which otherwise would have been distributed in dividends upon watered stock. The expediency of keeping down the rate of dividends to a reasonable figure has led the companies to devote a very large share of their receipts to the maintenance and betterment of rolling stock and stations. The State of Texas has also a statute similar to that of Massachusetts, providing that no bonds or other indebtedness shall be created in excess of a reasonable value of the railroad property, except that in case of emergency the railroad commission may authorize additional bonds to an amount not exceeding 50 per cent of the value of the property.

The success of the Massachusetts policy has been attributed by some to the peculiarly favorable conditions under which the system was applied. President Hadley remarks:

> It succeeded in Massachusetts partly because it was in the hands of able men, partly because the Massachusetts railroad system was so old that it had acquired a certain stability. Many abuses incident to the period of rapid growth had passed away or were in a fair way to regulate themselves. These same abuses in newer sections of the country might baffle all attempts at regulation. It is impossible to apply one system to all conditions. You could no more have applied European methods to our Western railroads than you could regulate the growth of an oak by tying tape measures around its branches.

These considerations have less force at the present time than they did in the year 1885, when President Hadley wrote the above comments. The railroad systems in other States have now been established and consolidated so that at the present time the conditions in those States are not so radically different from those in Massachusetts as formerly.

It would seem that this policy of Massachusetts might be adopted advantageously in other States which resemble Massachusetts in density of population and railroad equipment. It has been urged by witnesses before the Industrial Commission that so far as the limitation of capitalization is concerned, an act like the Massachusetts statute of 1894 might accomplish valuable results. In determining the limitations of capitalization permissible under the law, the Michigan plan of valuation, which has been already described, has also been extolled. According to this plan railway capital should be limited, not necessarily to bare cost of construction or even of duplication, but certainly to the fair franchise value of the property. The passage of laws similar to those of Massachusetts in the various States has been recommended as the first practical step in dealing with the abuses of stock watering.

Whether it might be necessary eventually to supplement State regulation of this character by more rigorous Federal supervision may be open to question. However this may be, a fair trial of the Massachusetts system would doubtless show in what directions further control, if needed, should be applied.

VII. POSITION AND POWERS OF THE INTERSTATE COMMERCE COMMISSION.

RELATION TO THE UNITED STATES COURTS.

A great change in the status and powers of the Interstate Commerce Commission has taken place since its institution in 1887. The law under which it was organized has been only slightly amended, but the decisions of judicial tribunals have greatly modified, and in general reduced, the powers and functions which the Commission was at first supposed to possess. At the outset two policies were open. One was to make the Commission a body whose primary function should be to detect violations of the law in matters of rate cutting, discrimination, and the like; the other was to develop its functions in the way of investigation, in order to discover the broader and more fundamental principles upon which equitable rate adjustment should be based. In pursuit of the first aim the Commission would naturally hear complaints from individuals and institute proceedings thereunder. Viewed in this way, it would partake rather of a detective or inquisitorial character. From the second point of view, the duty of the Commission would be rather to institute proceedings on its own account, not for the protection of individuals, but rather for its own information and acting upon its own initiative. In the main it has been contented to follow the first line of action, viz, to act only upon specific complaint from shippers or parties in interest. It has not, however, entirely refrained from inaugurating investigations on its own account, such as, for instance, in the well-known hearings in 1896 respecting railroad rates to Missouri River points and also those respecting the increases in classification of 1900. Its policy has in the main been to act only upon complaint.

PROCEDURE BEFORE THE COMMISSION.

In order to understand the situation, it may be necessary at the outset to describe the exact procedure in the majority of cases. Formal complaint having been filed with the Commission alleging violation of some section of the Act to regulate commerce, the Commission summons witnesses, and by the examination of papers arrives at a decision, which it promulgates as an order to the carriers. This order recites

that the action in question is or is not in violation of the act; and in the former event generally prescribes the necessary remedy. The situation at present is this, namely, that such orders are entirely disregarded by the carriers, who refuse to recognize their force and validity. The Commission in such a case appeals to the United States courts for an injunction compelling obedience to the order. In response to this appeal the courts proceed to review the entire case, and upon the findings issue an order which, after being upheld by the Supreme Court, in case appeal is taken, becomes binding upon the railroads. Then, and only then, is the act rendered effective.

This situation has caused the following results which are of primary importance: First, intolerable delay in the redress of grievances; second, the postponement of all definitive proceedings until the case has been opened before the courts; and third, the denial in many cases of any effective remedy whatever for loss to the shippers incurred. These may be considered somewhat in detail.

DELAY IN DECISIONS—APPEALS TO COURTS.

The first and constant complaint from shippers and others who seek redress by proceedings before the Interstate Commerce Commission is that years may elapse before any final decision is or can be rendered. The average duration of cases before the Commission is stated to be not less than four years, and this may in many instances extend to twice that length of time. The delay seems to proceed from a variety of causes. In the first place the Commission itself is often slow to arrive at a decision. A striking instance of this is offered in the case of proceedings instituted before it by the representatives of commercial interests of the city of Charleston. More than two years have already elapsed, and the primary order of the Commission has not yet been promulgated. Secondly, a large proportion of the cases of any importance are carried to the United States Circuit Court of Appeals, and finally to the United States Supreme Court. Great delay in such cases results because no priority whatever is accorded to these cases, which must take their regular course on the already crowded dockets. More important than all of these reasons for delay, however, is the fact that the courts have as a rule refused to accept the testimony taken before the Commission in the original proceedings as final. This necessitates the resummoning of all the witnesses previously examined and the production *de novo* of all the papers necessary to a judicial finding. This latter action of the courts seems to be based upon the decision in the Kentucky and Indiana Bridge case, in which it was held that the court must consider a case referred to it for enforcement as though it were original. The court, in other words, refused to consider the Commission's investigation as final even in respect to matters of fact. Another feature of this situation is even more unfortunate.

Inasmuch as the final decision in any important case can not be rendered until the courts have passed upon the case, and since the courts will not accept the findings or evidence before the Commission as final, it has become more and more common for the carriers to refuse to open their cases in full before the Commission at all. They do not present their arguments in full, nor do they summon their important witnesses, merely regarding the proceedings before the Commission as a necessary formality to be observed prior to the conclusive adjudication of the case by the courts. The Commission thus is compelled to issue its orders not upon a full and complete hearing of the case, and is obliged, moreover, to have its findings reviewed by the courts upon the basis of entirely new considerations. This tends, of course, to discredit the Commission, both in the eyes of the public and of the shippers, who do not realize that the cases passed upon originally by the commission and later, on appeal, by the courts, may be and often are essentially different. The Supreme Court, in its decision in the Social Circle and other recent leading cases, has strongly condemned this state of affairs.

After the review of the case by the courts, which usually covers the more technical points of law, it may become necessary for the entire question to be remanded to the Commission for a new decision in conformity with the findings of the court. Thus, for example, in the so-called Chattanooga Board of Trade cases, which were originally instituted before the Commission in 1892, a decision was rendered on appeal by the United States Supreme Court only in the present year, 1901, after a lapse of nine years. The Supreme Court has just returned the case to the Commission, with an order that its decision be based upon consideration of other commercial conditions, which it was not able to consider in its original decision. Supposing that after the necessary delay the Commission again issues an order, there seems to be no guaranty that the case shall be concluded even at that time. If it involves any money payment, of course it necessitates a trial before a circuit court; and new phases are always being presented which may allow the same case to be again appealed with the same intolerable delay. The entire history of proceedings before the Interstate Commerce Commission is one of delay and inefficiency in the equitable settlement of grievances by reason of the facts above enumerated.

LACK OF EFFECTIVE REMEDY.

Nor is there any guaranty that, even after the protracted delays incident to the method of procedure before the Commission and the courts above described, any effective remedy ultimately will be provided. As an instance, the well-known cases of the Cincinnati and Chicago Freight Bureaus may be cited. These were pending before the Commission and the courts for a number of years, and the railroads

still refuse to acquiesce in the decision as rendered. Even supposing that the carriers obey the order of the Commission, that does not necessarily provide any remedy for financial or other loss entailed. The orders of the Commission become effective, in theory, only when they have been passed upon finally by the United States Supreme Court. During all the years which may elapse the loss entailed upon the plaintiff may continue, and losses hundreds of times as great may ensue for others. And, even more important than this, it may be impossible that the parties who really are aggrieved can ever obtain redress. This point has been brought out clearly in the various reports of the Commission. Thus, for example, the only party who can recover for the excess in freight rates paid to the carrier is the person who has actually made the payment. It goes without saying that in many instances the real burden of the unreasonable freight rate does not rest upon this party at all, but upon others who are denied action by reason of the machinery of the law. Thus, for instance, if an unreasonable rate be charged upon grain from a certain locality, it is indubitable that the effect of that excessive freight rate is to depress unduly the price of the product. The farmer, however, can not institute proceedings before the Commission. It is only the middlemen who happen to be shippers who may do so, and the shippers may recoup themselves readily, having no incentive, therefore, to institute proceedings at all. The result is that the loss in any instance ultimately falls upon the producer of grain, without the possibility of an adequate remedy for the injustice entailed.

REMEDIES IN PROCEDURE SUGGESTED.

What are the remedies proposed for the defects in procedure which have been above described, and which are responsible for much of the dissatisfaction with the interstate-commerce act as it stands? Many of these were included in the act reported to the Senate by the Committee on Interstate and Foreign Commerce in 1894. They are substantially the same as those included in the so-called "Cullom bill," which was introduced in the last Congress. Stripped of all legal verbiage these amendments simply provide, in the first place, that the burden of appeal to the courts from orders or findings of the Commission shall rest upon the carriers rather than upon the Commission itself. In other words, the Commission having promulgated its order, the same shall become effective and binding unless the carriers shall bring suit in a United States court within thirty days to compel a review of the case. This, it is alleged, will operate to give finality to the larger proportion of the proceedings of the Commission, making them effective at once. Coupled with this provision is another which is intended to obviate the protracted delay in case an appeal is taken. Such amendment provides, in the first place, that

cases of this character shall take precedence on the docket of the United States courts over private causes; and secondly, that the evidence, pleadings, papers, and exhibits taken before the Commission and certified to by its secretary shall be filed with the court and received in evidence. The court may render its decision upon the basis of this evidence if it please, or it may require that the Commission secure additional testimony. In any event, however, such testimony or papers submitted by the Commission shall be regarded as competent. Inasmuch as the volume of such testimony is often great—in the recent San Bernadino case for instance filling ten large volumes of type script—this must result in a great economy both of time and of expense. To this amendment the railroads in 1897 seemed not disinclined to consent. Other advantages than mere economy are incidental to this plan. It necessitates that the courts shall pass upon precisely the same question which was presented to the Commission. This will protect the Commission against the appearance of incomplete, biased, or ill-considered judgments or orders. Further than this, to insure that the parties who actually bear the burden of an unreasonable freight rate or rate adjustment shall secure adequate redress, requires amendment of the act in other important details. Since, however, these do not involve mere procedure, but rather the essence of the act itself, they will be considered in another connection.

POWERS OF THE COMMISSION RESPECTING TESTIMONY AND THE PRODUCTION OF PAPERS.

In one respect only have the powers of the Interstate Commerce Commission been adequately fortified by amendment. This is in respect to its power to compel the attendance and testimony of witnesses as well as the production of papers. One of the primary questions passed upon by the courts was as to the powers of an administrative body like the Interstate Commerce Commission in this respect. The enforcement of the provisions of the act, especially in matters relating to personal discrimination, the payment of rebates, etc., necessitated the vindication of these rights of the Commission at the outset. For, in the first place, it has been held by the courts that corporations can be made amenable to the law only through the instrumentality of persons in their employ; and, secondly, the detection of guilt in such matters can only be secured by testimony of persons who have directly witnessed or participated in the acts themselves. For twenty-five years a section (860) of the Revised Statutes of the United States has required witnesses to testify in court, even if such testimony might be used against them in criminal proceedings. All that the statute did was to protect the witness against such pro-

ceedings, but not against giving the testimony itself. In 1892 the validity of this statute was passed upon in a leading case, wherein it was held that this statute was unconstitutional, being in violation of the Fifth Amendment to the Constitution of the United States, which provides that "No person shall be compelled in any criminal case to be a witness against himself." This decision in the well-known Counselman case very greatly hampered the Interstate Commerce Commission in securing evidence. Similar in tenor was a case also decided in 1892 in the United States Circuit Court at Chicago, known, as the Brimson case. Informal complaint had been made by shippers that the Illinois Steel Company was deriving illegal advantage over other shippers through the ownership and control of five so-called "switching roads." It was alleged that by means of the ownership of these short connections the Illinois Steel Company was obtaining unduly low through joint rates. In order to establish this fact it became necessary to ascertain whether the ownership of the switching roads was vested in the Illinois Steel Company or not. Several witnesses refused to testify, and the powers of the circuit court were invoked by the Interstate Commerce Commission in order to compel them to testify. The court held that the Commission was a nonjudicial body, and that the process of the courts could not be exercised in aid of an investigation before such a tribunal, inasmuch as this would involve a subordination of the judicial department of the Government to the executive branch.

The result of these two decisions in the Counselman and Brimson cases was that it became practically impossible for the Commission to institute any proceedings whatever. An appeal was made to Congress, and, as a result, an act was passed in 1893 which provided as follows:

> That no person shall be excused from attending and testifying * * * in any case or proceeding * * * based upon or growing out of any alleged violation of the act of Congress entitled an Act to Regulate Commerce * * * on the ground or for the reason that the testimony or evidence, documentary or otherwise, required of him may tend to criminate him or subject him to a penalty or forfeiture. But no person shall be prosecuted, etc., * * * for or on account of any transaction, matter or thing concerning which he may testify or produce evidence, documentary or otherwise.

The year 1894 witnessed a decision by the Supreme Court overruling the Brimson case above mentioned and once more upholding the Commission in invoking the process of the courts to compel testimony. In the same year while the special act of 1893 was in effect, a witness was subpœnaed to give testimony in the same case under the act. He refused to testify on the plea that his testimony would tend to criminate him. The grand jury reported him to the court, but he was discharged, it being alleged that the act of 1893 required testimony which would tend to criminate him, and that the act that was therefore unconstitutional. A decision of the Supreme Court on this issue could not

be secured at that time. Meanwhile, during all these years from the time of the original Counselman decision, the hands of the Commission were practically tied, in any endeavor to secure facts upon which to base any attempts to secure indictments under the criminal provisions of the original act.

The controversy respecting the powers of the Commission was not finally settled until 1896, at which time in the so-called Brown case the act of 1893 was held constitutional, although by a bare majority of the Supreme Court. This changed very materially the relations between the Interstate Commerce Commission and railroad officials and shippers who conspired to evade the law. At last, after almost five years, the right of the Commission in this respect was vindicated. The Brown case arose in 1895 under an indictment charging certain officials of the Allegheny Railroad Company with violating the interstate-commerce law. Mr. Brown, the auditor of this company, declined to answer certain questions as to freight rates charged and rebates given. The circuit court in this instance held that there was no apparent intention in the act of 1893 to shield witnesses from any humiliation or disgrace which might follow the confession of a criminal act, even although that law expressly exempted them from prosecution under it. Moreover, this decision held that no infamy or disgrace would attach to a witness, because by the act of testifying he had under the law wiped out the crime. Practically, therefore, the legislative act of 1893 provided a greater safeguard than even the Fifth Amendment to the Constitution. Under this decision of the circuit court, upheld by the Supreme Court in 1896, little difficulty has been experienced by the Commission in securing attendance of witnesses or production of such papers as may be necessary. In respect to this single detail of the law the effectiveness of the act seems to have been thoroughly secured.

It is interesting to note in this connection that the vindication of the right of the Commission to compel testimony changed considerably the attitude of the Commission relative to the penalties which should be provided by the statute respecting secret rebates and discrimination. It had for some years been maintained by the Commission that the imprisonment clause of the act was too severe; and that a large part of the difficulty in securing evidence resulted from the unwillingness of witnesses to testify to facts which might lead to the imprisonment of associates or others. It was held that, if the stringency of this provision were mitigated to a mere money penalty, the unwillingness of witnesses to testify would be lessened. Having, however, under the Brown decision above named, secured power to compel attendance and testimony of witnesses, regardless of the fact as to whether such testimony would entail imprisonment for shippers or fellow-servants, the Commission has once more urged that the imprisonment clauses of the act be maintained in all their former stringency.

POWER TO PRESCRIBE FREIGHT RATES.

DECISIONS OF COURTS RESTRICTING POWER.

Within two months after the establishment of the Interstate Commerce Commission it began to interpret the law as giving it, not only power to investigate matters of freight rates, but also to prescribe and enforce the remedy for existing evils. The exercise of rate-making power, however, was directed entirely to the correction of such abuses as came before it on complaint. The Commission distinctly refrained from claiming the right to prescribe the rate in first instance, as is shown by its decision in the Delaware and Hudson Canal Company case. This limitation upon its right to prescribe rates, fully recognized by itself, is clearly shown in its statement in the Cincinnati and Chicago Freight Bureaus decision as follows:

> This Commission is not primarily a rate-making body. The carrier is left free to arrange its own tariffs in the first instance. We sit for the correction of what is unreasonable and unjust in those tariffs.

No question either on the part of the carriers, of the Commission, or the courts was raised as to the validity of this action within the limits named.

It was not until almost ten years after the institution of the Commission, in fact, that its right in this respect was contested. The first shadow of doubt seems to have been expressed in the decision of the Supreme Court in the so-called "Social Circle" case adjudged in 1896. This case involved the reasonableness of rates from Cincinnati to the town of Social Circle, Ga., as related to the rates to Atlanta and Augusta on either side. Disregarding other phases of the case which concerned the interpretation of the long and short haul clause, the Commission had, when the case was first decided in 1889, ordered a reduction of the rate from Cincinnati to Atlanta from $1.09 to $1 per 100 pounds. This case was carried to the Supreme Court, where decision was finally rendered in 1896. Purely as an *obiter dictum* the court discussed briefly the interpretation of the original act in respect to this rate-making power. It expressed a reasonable doubt in the premises, even going further and confessing inability to find any provision of the act "that expressly or by necessary implication confers such power." It does not seem clear whether by this statement the court had reference to the arbitrary prescription of rates in first instance to the carriers, or merely to action of the Commission in prescribing rates after complaint in order to redress grievances.

Several decisions of circuit courts during 1896, and finally another leading case before the Supreme Court of the United States, reenforced the judicial doubt as to the validity of the rate-making power of the Commission. Thus, for example, in the well-known case of Coxe

Brothers, involving rates upon anthracite coal, which, by the way, had been pending since 1891, the Supreme Court expressly declined to enforce an order of the Commission, stating that it "is not clothed with the power to fix rates which it undertook to exercise in this case." The court's reasoning in the Social Circle case was followed and expressly cited. During the same year, 1896, other cases, such as that of the Truck Farmers' Association, were decided in the same spirit. The final adjudication of this point, however, was reserved for the decision in the so-called "Freight Bureau," cases. These had their origin in an application from the Commission to enforce an order issued in 1894 against the Cincinnati, New Orleans and Texas Pacific Railroad Company. The case involved the adjustment of rates from Eastern and Western centers, respectively, into the Southern States; and the Commission had decided that a reduction of the rates from the Western cities was reasonable and necessary. This leading case, also known as the "Maximum Freight Rate" decision of 1896, is characterized by the Commission itself as perhaps "the most important since the enactment of the act to regulate commerce." It merits consideration in some detail.

The Maximum Freight Rate decision (167 U. S., 479), stripped of legal verbiage, holds that the Interstate Commerce Commission has no power under the law of 1887 to prescribe a rate for the future, although its right to pass upon the reasonableness or unreasonableness of a rate already paid and of which complaint is made is unquestioned. The court fully recognized this fact, yet it reserved to the shipper as a protection for unreasonable exactions merely the right to institute proceedings for a rebate of such excessive charges as had already been paid. It should be noted that no denial whatever of the power of the Commission under the law to adjudge rates unreasonable was entertained in this decision. What it was empowered to do was merely to decide whether a given rate was unreasonable, but not to go further and to decide as to the degree of its unreasonableness. But the difference between this range of powers and those which had been claimed by the Commission for ten years is simply this: That under the original interpretation of the law the Commission had not only decided whether rates were wrong; it had also prescribed a remedy by issuing an order as to what rates were right, believing that these would be enforced by the courts. Not even the right to prescribe maximum rates would seem to have remained to the Commission after this interpretation. The only action open to it would be to declare one rate after another unreasonable until the carriers had been brought to terms. The inadequacy of this as a practical remedy remains to be discussed later. At the same time, while denying the power to fix rates even after complaint, the court affirmed the power to enforce various other sections of the act under which rates were actually made.

EFFECT OF MAXIMUM FREIGHT-RATE DECISION.

The immediate effect of this decision was to prevent any enforcement of orders relative to rates by the Commission. The carriers immediately refused to obey any orders which the Commission issued for the redress of grievances. This policy has been manifested with increasing clearness during the five years subsequent to the decision. It has become more and more certain that the denial of the right, not only to pass upon the reasonableness of a particular rate, but to prescribe what rate should supersede it, means the abolition of all control whatever. The entire inadequacy of making rate regulation dependent upon the mere determination of rates as applied *in the past* without reference to the rates which shall prevail *in the future* is apparent on all sides. More than this, all remedy for the parties who have borne the burden of an unreasonable rate would seem to have been removed. This has been clearly described in the report of the Commission for 1897. It may be illustrated by the example of rates upon oranges. In 1890 there was a sudden advance on rates from Florida to New York from 30 to 40 cents. The Commission after investigation ordered that the rate be reduced to 35 cents. As a matter of fact, how could this action redress grievances of those who had already paid 40 cents per box? It was difficult in the first place to discover who bore the burden of the unreasonable charge; and in the second place it was certain that some of those who suffered could not legally sue in court. The actual shipper who alone could sue for repayment of unreasonable charges was a middleman who recouped himself in any event, either from the grower, the consumer, or both. He lost nothing by reason of the unreasonable rate. As a matter of fact, not any single individual, but the locality had been mulcted by 5 cents per 100 pounds, supposing that a rate of 40 cents were unreasonable. Experience shows that almost no shippers or other parties injured actually attempt to secure the restitution of moneys already paid for unreasonable charges. In only 5 out of 225 cases down to 1897 was a rebate actually sought, and in those cases $100 was the maximum sought to be recovered. As a matter of fact the damage inflicted by the existence of such an unreasonable rate could not be measured by hundreds or perhaps by hundreds of thousands of dollars. The bearing of this citation is to show that any effectual protection to the shipper must proceed from adjudication of the reasonableness of rates *before*, and not *after*, they have been paid; that is to say, in advance of their exaction by the carrier. Power to pass upon the reasonableness of such rates prior to their enforcement, as a consequence constitutes practically the only safeguard which the shipping public may enjoy. It will be observed that in this discussion reference is made simply and solely to that class of cases where complaint is made against

the unreasonableness of a rate *per se* as applied to all shippers alike, entirely distinct from the exercise of powers by the Commission in respect of unreasonable discrimination as between two or more persons.

OBJECTIONS TO POWER TO FIX RATES IN ADVANCE.

Three objections to conferring power to prescribe rates in advance—that is to say, to pass upon their reasonableness before they can be put in effect—have been urged.

1. The first is that the exercise of such power involves enormous sums of money and the welfare and prosperity of entire industries and sections of the country. This has been strongly stated by Walker D. Hines, now vice-president of the Louisville and Nashville Railroad, one of the opponents of such amendment of the act:[1]

> Having this arrangement it is calmly proposed to leave to the judgment of five men—of three if the five do not agree—trained as lawyers, representing five localities in all, with power to ruin industries, to boom towns, to determine whether the Kansas farmer shall burn his corn for fuel or send it to market, and with power at the same time to make or break every railroad corporation in the land, to send any railroad stocks or bonds up or down in the stock market, to control importations of every kind and to limit all exportations, to exclude Baltimore or Boston or any other city from the transacting of export business, of changing existing differentials, to array the North against the South, the East against the West, by overturning conditions established by competition and substituting therefor the decree of the "rule of thumb." In fact, to absolutely dominate this land of ours with the power of pagan consuls.

No denial whatever of the arbitrary and enormous power which the right to make freight rates imposes can be entertained for a moment. A pertinent question, however, is as to whether the exercise of such power by irresponsible railroad managers, as at present, is any more reasonable. If, according to the statement of the railroad interests themselves, the power to make freight rates involves the right to make or break men, industries, and even the prosperity of entire States, how great is the necessity for adequate supervision, subject to appeal to the courts!

This is apparently recognized by the more conservative representatives of the carriers themselves, as evidenced by testimony before the Industrial Commission. Under the circumstances at present prevalent this arbitrary power is exercised by one party, namely, the traffic managers of the railroads in interest, without any appeal whatever. If the powers of the Interstate Commerce Commission were to be rehabilitated by amendment of the act, it would simply mean that the public interests and those of the shippers would be entitled to representation in originally fixing the rates, leaving thereafter the final decision in contested cases for judicial determination.

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[1] Commercial and Financial Chronicle; Vol. LXVI, p. 57.

2. A second objection to conferring any enlargement of powers in the matter of rate making upon the Interstate Commerce Commission is, that the granting of any power to prescribe rates in advance of their enforcement means of necessity a transfer of the entire rate-making power from the railroads to a governmental administrative body. It has been persistently urged before the Industrial Commission that no middle ground between these two extremes exists. It must be conceded that there is some justification for this claim of the carriers that the right to prescribe *any* rates may mean the exercise of power to prescribe *all* rates. For in the first place it is undoubtedly true that no rate can be altered, even in a slight degree, without at the same time disturbing other rates, not only in the adjacent territory, but perhaps all over the country. So complex and far-reaching are adjustments of rates in many parts of the United States that disturbance of a single charge may involve a recasting of the entire schedule of rates throughout many States. This is the most serious phase of the question to be considered. It may be illustrated in another way. Almost all the rates for long distances are made up by several carriers, publishing together what are known as joint rates. Any determination of the reasonableness of a long-haul rate necessarily involves a readjustment of all these divisions. Thus, for example, to quote again from the Interstate Commerce Commission's reports, suppose there be a complaint that the rate from Chicago, Ill., to Kearney, Nebr., is unreasonable. This rate is compounded of an interstate rate from Chicago to Omaha, plus a local rate prescribed by the State commission of Nebraska. Nevertheless, the only rates over which the Interstate Commerce Commission may have jurisdiction is the proportion from Chicago to Omaha. The Commission might compel the whole rate to be reduced, but it could not allot that reduction between the several carriers. To prescribe reasonable rates, therefore, means necessarily to go farther and control the pro-rating of charges all along the line. On the other hand, as against the claim that the exercise by the Commission of the right to prescribe rates involves the transfer of all rate-making power for the roads of the country to an administrative Commission, it may be urged that, during the ten years that this power was supposed to exist, no such revolutionary effect was discernible. So long as the Commission is restricted to issuing orders only upon complaint and after investigation, it is scarcely to be feared that the roads will be deprived of their right to promulgate rates in first instance for themselves. The distinction must, of course, be very sharply drawn between these two courses of action. First, the conservative one, which merely recognizes the Commission's right to make rates in cases where there is prima facie evidence of unreasonableness; and secondly, the far more revolutionary one, which has never been claimed by the Commission or for it, to make up the rate

and classification schedules for the railroads of the United States, as is done by some of the State railroad commissions. Such a task would undoubtedly be beyond the power of any Federal commission, however large or omniscient. It would involve a usurpation of the rights which are inherent under our Constitution in the conduct of even semi-private business.

3. The third and final objection to conferring the rate-making power, not in first instance, as is continually to be kept in view, but only after complaint and investigation, is that it involves the injustice of a commission sitting in judgment upon a case which it has made for itself. It has been repeatedly urged that to clothe the Commission with such power is, under the method of procedure adopted, a violation of all long-established rules of legal adjudication. The best answer to this allegation is a statement of the case as it exists to-day. If this be an intolerable situation, is it less unreasonable that the traffic managers of the railroads should reserve to themselves the entire right to pass upon the reasonableness of the rates which they have themselves put in force for the use of shippers? Two parties are concerned, the shippers and the railroads, whose interests are often conflicting. The burden of complaint at the present time is that the railroads are the sole arbiters as to reasonable rates, and it seems illogical, therefore, however expedient as a matter of policy it may be for them, to allege the injustice of such a situation as a ground for objection to conferring rate-making supervision upon a governmental commission. Nor is the objection valid in fact, for while the Commission may in some cases institute proceedings before itself, yet it does so merely as representing the interests of shippers or others. By and for itself it should have no interest at stake except to secure the enforcement of the law and the equitable adjustment of all interests involved.

POSSIBLE COURSES OF ACTION AS TO SUPERVISION OF RATES.

There are two possible courses of action in respect of rate-making supervision or control.

1. The first is to leave all such adjudication to the courts. This is practically the situation at the present time. Some of the difficulties have already been outlined at length. Another equally important one is that adjudication by the courts can not secure an adequate remedy. The only redress for an unreasonable rate is a changing of the rate itself—that is to say, an order compelling the application of a new freight rate to suit the circumstances. This remedy can not be secured under our Constitution, inasmuch as the functions of the United States courts are and must be entirely judicial. The Supreme Court itself has clearly recognized the difference between administrative and legis

both its character and extent. Grave misconception may arise from failure to do this. Water competition may be considered first in respect of its character, as on canal, river, lake, or ocean. These several varieties, in their order, illustrate in increasing degree the potency of such competition. Inasmuch as their effect is so various in each case, they should be considered separately.

CANAL COMPETITION.

Competition of artificial waterways or canals has played a very important part in the regulation of rail rates, especially in the early period of our history. It is indisputable that the Erie Canal, for example, operated to reduce rates upon the great trunk lines for many years. This condition was clearly evidenced by the testimony in 1874 before the select Congressional Committee on Transportation Routes to the Seaboard. Since this time a mighty change has taken place in the relations between the two modes of carriage. As has been shown at length in an earlier portion of this report, improvements vast in their scope and character have ensued in respect of transportation by rail. The canal boat, on the other hand, remains very much as it was in the heyday of such carriage fifty years ago. The declining importance of canals as regulators of freight rates is evidenced clearly in two ways. In the first place, the unprofitableness of the business, upon the Erie Canal in particular, is shown by the decline in the number of boats. Only four new boats were constructed in 1899, 16 in 1897, and 12 in 1896. Secondly, the declining importance of water competition is shown in the reduction of the proportion of traffic carried, even of the lower grade. In 1898 the New York Central and Erie railroads carried 46,000,000 tons of freight, as against 2,300,000 on the Erie Canal. Boats did not exist to carry any larger proportion than this, and this small fraction going by water was in reality diverted from the roads because they did not care for it. The bulk of the canal traffic consists of lumber, ice, stone, lime, and coal. Less than 10 per cent in 1899, and in 1900 less than 8 per cent, of the flour and grain received at New York came by this route. The decline has been forcibly illustrated by the reports of the New York State Committee on Canals of 1899, and of the New York Commerce Commission of 1900. Canal competition, in short, has ceased to be effective. The statement of Mr. Carnegie before the Pittsburg Chamber of Commerce in 1898 is significant in this connection:

> Such has been the progress of railway development that if we had a canal to-day from Lake Erie through the Ohio Valley to Beaver, free of toll, we could not afford to put boats on it. It is cheaper to-day to transfer the ore to fifty-ton cars and bring it to our works at Pittsburg over our railway than it would be to bring it by canal.

The lowest estimate of the cost of transporting grain from Buffalo to New York is 1.75 mills per ton-mile. This, it will be noted, is

largely in excess of the figures cited for the cost of railroad operation under the most favorable circumstances on standard routes, as given in an earlier part of this report. And, finally, we have the specific testimony of the chairman of the railroad grain committee at Buffalo before the Interstate Commerce Commission in 1900. Here it was clearly shown that the canal was ineffective under present conditions, such as size and speed of boats, either in carrying traffic or making rates, and that canal rates were now made in accordance with those made by the railroad companies. Competition has entirely outdistanced any possible scale of charges upon such canals as exist at the present time. How far the proposed expenditure by the State of New York of some $67,000,000 to enlarge and improve the canals will modify the conditions as above stated, remains for the future to determine.

RIVER COMPETITION.

River competition should be considered in two classes, according to its importance. Traffic upon the Ohio and Mississippi obviously stands in a different class as respects competition with railroads, from that carried on the little rivers throughout the South, for example. In respect to the first, the same phenomenon of decline in the number of boats and investment of capital may be observed upon the Mississippi as has been instanced upon the Erie Canal. This has been positively stated by witnesses before the Industrial Commission. It is significant of this change that the aggregate tonnage forwarded from St. Louis in 1880 by water was 1,037,000 tons, while in 1900 it was only 245,000 tons. Some slight improvement has been witnessed since 1890, but no approximation to the former magnitude is apparent. This decline of the Mississippi River traffic is primarily due to the fact that it has been paralleled upon both sides by easy-grade railroads operating with huge train loads at a minimum of cost. To be sure, for many kinds of freight river steamers can underbid their competitors, particularly at local points; but, on the other hand, insurance charges, risk of damages from water, or in loading, together with other disabilities, have greatly hampered the boats in competition. The increasing uncertainty of the river itself, due to artificial drainage and the cutting of our forests, is also a factor, inasmuch as capital investment must oftentimes remain inactive for several months at a time. A peculiar feature of this competition also is, as alleged by the river men, that the railroads can afford to take traffic at unduly low rates at competitive points and recoup themselves by high charges at local inland stations. This line of action is not open to the steamers, it is alleged, because none of their local points is noncompetitive, as in the case of the railroad. Some other steamer is always free to touch at a local point. The consequence is that the long and short haul principle

must, in the nature of the case, be more generally observed by the river boats, yielding a distinct advantage to the carriers by rail where they engage in competition.

The only exception to the decline of importance of the great rivers as rate regulators is found in the case of the Ohio and Mississippi in respect of transportation of ore, lumber, and coal. It is unquestionable that when coal can be carried from Pittsburg to New Orleans, 2,000 miles, at $1 a ton—that is to say, at less than half a mill a ton a mile—the railroads are prevented from engaging in competition, and the magnitude of this traffic down river in low-grade freight is undoubtedly increasing at the present time. Where it exists it must be reckoned as a factor in the determination of the rates which the railroads may charge.

Entirely distinct from the water competition on the Mississippi and Ohio is competition upon the smaller rivers, which, for example, penetrate the Southern States through and through. It is important to bear this in mind because the persistent violation of the long and short haul clause by the railroads in the Southern States has been justified on the ground of the existence of competition of this kind. Extended examination by an agent of the Industrial Commission, as well as consideration of the various reports and decisions of the Interstate Commerce Commission, tend to show that this water competition on the small rivers is practically of little effect. It does, of course, fix the minimum rate, but the steamers are so small and their service is so irregular, and the incidental risk of damage, cost for insurance, and other charges are so great, that the railroads practically control the business. Moreover, in many places it appears as if the steamboat lines were either owned by the railroads or by those operating in league with them, or else that a division of the business has been effected by which the little river steamers were accorded a certain proportion of the low-grade freight. These facts have been established in detail in the so-called Dawson case before the Interstate Commerce Commission concerning the Chattahoochee River; on the Oomulgee, at Macon, in the Griffin case, as also in the Hawkinsville case; at Montgomery in the Troy cases; and on the St. Johns River at Palatka, Fla., in the Hampton case. Many experiments have been tried to institute effective water competition with the roads at Nashville and Chattanooga, and yet we have the statement of a competent witness before the Senate Interstate Commerce Committee of 1897 that there is no more water competition there than in the Rocky Mountains. The conclusion is that the railroads with their improved facilities are enabled to put rates in force so low as practically to drive the water lines out of business. It is true, perhaps, that the latter are potentially of importance—that is to say, their services fix the minimum rate which the roads may charge; but, on the other hand, their facilities are

altogether inadequate to the transportation of any considerable volume of business, and they are constantly under threat of extinction by rate wars imposed by the railroads.

LAKE AND OCEAN COMPETITION.

The last two classes of water competition, namely, upon the Great Lakes and the ocean, seem to be more important than in the case either of rivers or canals.[1] The reason for this is to be found in the fact that deep water enables an increase in the size of the boats and a corresponding decrease in the cost of service. It can not be denied that the existence of a thousand vessels carrying ore from Lake Superior ports, or of the speedy and commodious steamers plying between Savannah and New Orleans and New York, fixes freight rates which the railroads are compelled to regard as final. On the other hand, some grades of freight will not go by water routes under any circumstances; and in the second place, and more important still, many of these lines, both upon the lakes and upon the coast, have been bought up and are now controlled either by single railroad lines or by a number of systems operating jointly. The ownership of boats on the lakes by all of the large railroad companies is a matter of public record. That such lines as the Old Dominion Steamship Company along the seacoast are also controlled through ownership of stock by a number of the trunk lines, has also been established by testimony before the Industrial Commission. Of course, even in such instances, tramp steamers may always come in to disturb the level of rates, but, on the other hand, year in and year out the effectiveness of such competition is probably less than it was a number of years ago. Making all allowances, however, for these facts, it still appears that competition upon either of these great waterways does constitute a valid excuse for departure from the provisions of the long and short haul clause of the act of 1887, which now remains to be described.

THE LONG AND SHORT HAUL CLAUSE AND ITS INTERPRETATION.

One of the most important provisions of the original act to regulate commerce was intended to prevent unjust discrimination between localities. Section 4 of the act aimed to prevent discrimination between towns and cities of various sizes and conditions as the preceding sections of the law sought to prevent unjust discrimination between individual shippers. The exact language of the statute is as follows:

> That it shall be unlawful for any common carrier subject to the provisions of this act to charge or receive any greater compensation in the aggregate for the transportation of passengers or of like kind of property, under substantially similar circumstances and conditions, for a shorter than for a longer distance over the same line, in the same direction, the shorter being included in the longer distance.

[1] See p. 478 *infra* for comparison of lake and rail rates.

This section of the statute constituted no innovation whatever. It was based specifically upon a number of State laws, more or less similar to it in tenor. In Vermont, for example, since 1850; in Virginia, since 1867, and in Massachusetts, since 1874, long and short haul clauses had been in force. Some seventeen States, prior to the enactment of the interstate-commerce act in 1887, had conceded the wisdom of such an adjustment between local and long hauls. Nor were such statutes disregarded, as a rule. Thus, in Massachusetts they were enforced to the extreme degree of prohibiting any concession in rates at Provincetown, on the point of Cape Cod, 120 miles from Boston by land, while only 36 miles in a direct line by water, below the rates at any of the intermediate points on the roundabout rail line along the Cape. The debates in Congress at the time this section of the act was under discussion show that the bill as finally passed was a compromise between an absolutely inflexible prohibition in the House, and a more elastic measure, providing for exceptions, in the Senate.

The carriers of the United States immediately after the passage of the act seemed to have accepted this provision of the bill seriously, and to have made strenuous attempts to adjust their tariffs in accordance with the principle involved—namely, that distance was a sufficiently important factor in the determination of the cost of transportation to require that charges should be graded according to the length of the haul. The immediate effect of acquiescence in the law was to compel, in many parts of the country, a reduction of the local rates in order to bring them below the rates charged to terminal and competitive points. Thus, for example, throughout the trunk line territory they were almost uniformly adjusted to meet this requirement. Even in the Southern States, where in some quarters the most persistent opposition to the law has from the first existed, there was a patent disposition shown to recognize the justice of such legislation. The Southern Railway modified its tariff all along the line as far as Atlanta, although it claimed inability to make changes beyond that point. For nearly three years, in fact, the carriers all over the country conformed in an increasing degree to this requirement of the law.

The interpretation of the long and short haul clause, as applied to concrete cases by the Interstate Commerce Commission, was first enunciated in the decision known as the Louisville and Nashville case. Immediately after the enactment of the act a multitude of petitions was received from carriers all over the country, praying that they be exempted from the operation of this clause prohibiting a greater charge for a shorter haul than for one over the same line between two points more distant. The policy outlined in the decision in the Louisville and Nashville case, delivered by Judge Cooley, has practically remained unchanged to the present time. This railroad company, operating a line parallel to the Mississippi, as well as intersected at

various points by its tributary rivers, claimed that the existence of water competition compelled a rate to all competitive points lower than the rate which could be made to local and intermediate stations. It alleged that an adjustment of its local rates to the low level necessitated at competitive points would prove disastrous from the point of view of revenue. The point at issue was as to the interpretation of the phrase "under substantially similar circumstances and conditions," which, in the words of the act, were necessary in order that the prohibition of the less charge for the longer haul over the same line should become operative. Without entering into the details of this decision, in the course of which the nature of railroad competition and of rate making was fully discussed, as well as the legislative history of this clause of the act, it would be well to note the conclusions. These were, first, that the prohibition against a greater charge for a shorter than for a longer distance over the same line in the same direction, the shorter being included within the longer distance, is limited to cases in which the circumstances and conditions are substantially similar. Secondly, that carriers might judge in the first instance as to the similarity or dissimilarity of circumstances; but thirdly, that their judgment was not final, but was subject to review by the Commission and the courts. Perhaps the most important point was the definition of that which constituted such dissimilar circumstances and conditions as would entitle the carrier to charge less for the longer than for the shorter haul. These conditions were stated to be: The existence of water competition; the existence of competition of other carriers not subject to the statute; and, finally, "rare and peculiar" cases of competition between railroads which are subject to the statute. The Commission also held as a guiding principle in the interpretation of this clause that no distinction would be recognized between local traffic and so-called through business; and also that the expense to the carrier involved would not be recognized as a factor unless it happened to come under the case already cited as "rare and peculiar." Furthermore, the desire to encourage manufactures, or to build up business or trade centers, was not recognized as a competent reason for claiming exemption from the prohibition in the act.

The leading decision of the Interstate Commerce Commission in the Louisville and Nashville case above mentioned was rendered in 1887. It was not until October of 1892 that the first serious interference arose through judicial interpretation in the United States courts. The first of these conflicting decisions was the so-called "separate and independent line" decision in the case of the Chicago and Northwestern Railway, etc., *v.* Osborne (52 Federal Rep., 912). This case arose respecting a suit for the repayment of $225 as overcharges on corn shipped by Osborne from Scranton, Iowa, to Chicago. It was claimed that the charges were unjust and unreasonable, inasmuch as they were in excess

of rates charged from Blair, Nebr., a point more remote from Chicago. The United States Circuit Court of Appeals at St. Paul reversed the decision of the lower court, holding that the lower rate from Blair with which the Scranton rate had been compared was not a rate to Chicago, but part of an agreed through rate to New York and other Eastern points. Under this interpretation the aggregate charge for the longer distance from Blair to New York was not less than the charge for the shorter distance from Scranton to Chicago. Up to this point this decision was in conformity with previous interpretations of the law by the courts and the Commission, which had uniformly held that a portion of a joint through rate can not be compared with local or individual rates in the determination of what constitutes the just rate for the shorter or the longer haul. This decision went further, however, and herein profoundly affected the subsequent interpretation of the law. It proceeded to define the word "line," as used in the act, by holding that the joint line formed by two roads is wholly independent of the two lines represented by the roads taken separately and apart. Interpreted in this way, the decision held furthermore that the total joint rate over two roads, not being over the "same line," might for anything in the fourth section of the act, not only be as low but even lower than the local rate on either road. The effect of this decision was obviously to permit a railroad to engage in traffic agreements for through carriage of freight, and by so doing legally to become a line separate and independent from the same physical property when engaged in the transportation of local freight over its own line alone. Moreover, by every contract for through carriage of freight with different carriers it became a separate and independent line in the eyes of the law. As many lines could exist over one set of rails as there were traffic agreements for through haulage of freight between its terminal points. The significance of this decision is fully discussed in the sixth and seventh reports of the Interstate Commerce Commission, which early in 1887 had already defined the word "line" in the Central Vermont case as meaning the physical line, and not mere traffic agreements.

The apprehension of the Interstate Commerce Commission that this interpretation of the word "line" might render the fourth section of the act inoperative was realized in the following year. Several decisions not only adopted the obiter dictum of the Osborne case, above described, but proceeded to expand upon it. Thus, for example, in the Georgia Federal court a case arose involving rates from the North to Atlanta as compared with the higher rates to intermediate points. The court held that traffic from Cincinnati to Augusta or Atlanta was carried over a different line than that which was used for transportation to points intermediate between Atlanta and Augusta, inasmuch as the several carriers agreeing upon the joint rate as far as Atlanta

from the North were different. Moreover it held that the road from Atlanta to Augusta, being wholly within the State of Georgia, might, by making a local rate from Atlanta, which was added to the through rate into Atlanta, constitute itself merely a State road, and therefore be exempted from this as well as all other prohibitions of the act. Thus it appeared, to quote from the report of the Commission for 1893, "that, in addition to the embarrassments proposed by the original 'line' decision, the very jurisdiction of the law itself is invaded by the extension of the line theory indulged in by the Georgia Federal court."

The interpretation put upon the fourth section of the act by the decision above cited remained in force, and largely nullified application of the act itself until 1896. Final adjudication was secured, however, in the decision by the Supreme Court of the United States in the so-called "Social Circle" case. This decision, to which reference has already been made in another connection, fully discussed the interpretation placed upon the word "line" in the act. The rates involved were those on buggies from Cincinnati, Ohio, to Social Circle, a local station between Augusta and Atlanta, Ga. Following the practice of the carriers for some years, the Georgia Railroad Company, which alone served the town of Social Circle, had requested its connections at Atlanta not to name through rates to that place or any other local station on its road. The circuit court, following the line of argument already described, had held that under such circumstances the Georgia Railroad was only a local carrier, and not a party to a joint or common arrangement which would make it subject to the control of the Federal commission. The Supreme Court reversed this opinion, and held that when goods are shipped on a through bill of lading, they constitute an interstate carriage subject to Federal supervision and control. The court held further that this State road became part of a continuous line, not by consolidation with other companies, but by a traffic arrangement for continuous carriage or shipment. The Supreme Court interpreted the original Osborne decision as merely affirming that a railroad company doing business in one State could not be compelled to enter into any agreement with connecting carriers. For by so doing, it continued, the carrier might be deprived of its rights and powers to make rates on its own road. Viewed in this way a carrier might agree to form a continuous line for the transportation of foreign freight at a through rate without being prevented from charging ordinary local rates for State traffic. Stripped of legal verbiage, this interpretation by the Supreme Court virtually overruled the previous decisions by lower courts, and rehabilitated the original interpretation of the word "line" by the Commission, namely, that when a continuous line for through traffic is formed by several railroads, the roads constituting that line and making use of it are merely

parts of one through route and are not separate lines. In short, not being able to constitute themselves as separate lines by reason of mere traffic contracts, they must continue to conform their through charges to the rates which they have made upon local business. So far as the enforcement of the fourth section was concerned, therefore, developments to this point had finally upheld the law as originally passed. It remained for a separate and distinct course of judicial interpretation to once more jeopardize both the practical operation of the law and the power of the Commission.

Reverting to the original Louisville and Nashville decision in 1887, it will appear that the Commission held at that time that competition between carriers subject to the act did not constitute such dissimilarity of circumstances and conditions as would justify the carriers in making their long distance rates lower than the rates between intermediate points. The only exception recognized at that time was to be found in certain "rare and peculiar" cases. One of these will suffice as an illustration. There are two routes by which traffic from Youngstown, Ohio, may reach the East. One is by way of Pittsburg and the Pennsylvania Railroad; the other by an outlet north through Ashtabula upon the Lake Shore and New York Central trunk line. Between Youngstown, Ohio, and Pittsburg, two parallel lines exist, each having an interest in forwarding freight to the East by the two routes above mentioned. The peculiarity of the situation is that competitive traffic for the East over these two routes leaves Pittsburg in opposite direction. If it goes around by Youngstown, that place becomes an intermediate point between Pittsburg and New York. If, on the other hand, it goes from Pittsburg directly east, Youngstown becomes not an intermediate point, but one more remote than Pittsburg from New York. Inasmuch as the Pennsylvania route from Pittsburg is the shorter, it makes the rate. The roundabout route is obliged to accede to this compelled rate or lose the business. The result is that the smaller indirect road is obliged to give a lower rate from Pittsburg round by way of Youngstown to New York than it gives to Youngstown itself, which by that route became a way station. Any other course of action would deprive it of any participation in Pittsburg business. Such, then, is one of those "rare and peculiar" cases under which the Commission, from the first, recognized the necessity of exempting carriers, even where all are subject to the act, from the prohibition of charging less for a longer than for a shorter haul over the same line.

The railroads from the outset had made a determined effort to show that the competition of carriers among themselves was competent to produce the dissimilarity of circumstances and conditions which would justify exemption from the act. This contention the Commission refused to recognize, and did so particularly in the important decisions of 1892, known as the Georgia Railroad Commission cases. These

again involved rates from Cincinnati to various points throughout the South, and had reference particularly to the prevalent practice of granting low rates to certain important centers, known as basing points. In this decision the Commission reaffirmed the principles set forth in the Louisville and Nashville case, except in one detail, namely, as to whether the carriers were justified in deciding for themselves, in first instance, whether a case of railroad competition is of that type already defined as "rare and peculiar" which would permit exemption from the long and short haul prohibition. Experience of five years had shown that the exercise of this right of decision in this respect had led to manifold abuses, inasmuch as a strong disposition on the part of the carriers all over the country was shown to interpret all cases of railroad competition, however simple, as "rare and peculiar." The Commission, therefore proceeded to overrule its earlier decision, and denied the right on the part of carriers to determine for themselves as to what constituted dissimilarity of circumstances and conditions. Without detailing the various decisions, both by the Commission and the courts upon this point, it will suffice to state that the matter has been finally settled by the decision of the United States Supreme Court in 1896 in what is known as the Alabama Midland Railway case. This once and for all overrules the interpretation placed upon the law by the Commission—that railroad competition does not constitute that dissimilarity of circumstances and conditions which would entitle a carrier to exemption from the prohibitions of the statute. This case, like almost all the others involving the interpretation of the fourth section, arose upon complaint of a small town in the Southern States that more important trade centers were securing advantages in the matter of rates which were denied to it. The Board of Trade of Troy, Ala., complained that it was compelled to pay $3.22 a ton on phosphate rock from Florida and South Carolina points, whereas the rate to Montgomery, a longer distance, was only $3.00 per ton. The rock was carried through Troy. It was also complained that the rates on cotton discriminated against Troy as compared with Montgomery and other points, and that, thirdly, rates from Baltimore and New York were higher to Troy than to Montgomery, which was 52 miles farther away. The case was carried on appeal to the Supreme Court of the United States, and a decision was rendered in 1896 (69 Federal Rep., 227). The gist of this decision was that competition, whether of trade centers or of railroads, must be recognized as a factor in the determination of the similarity of circumstances and conditions under which the fourth section of the clause should be applied. In other words, it recited that Montgomery being a larger place than Troy, and having been an important trade center on a navigable river for many years, it was competent for the railroads centering at Montgomery to determine in part for themselves whether the existence of effective competition

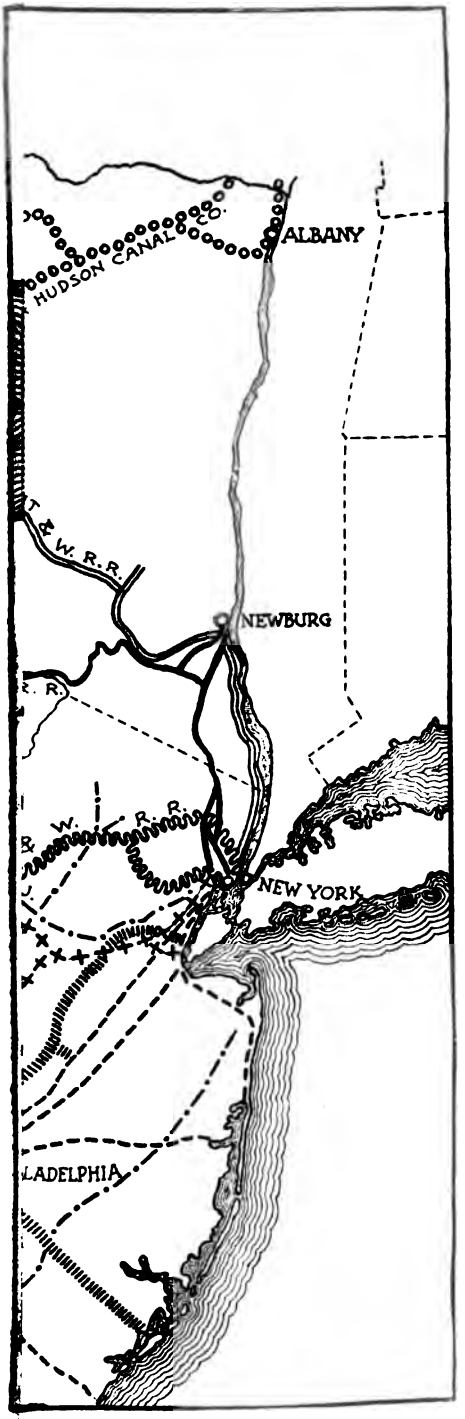
would justify or compel them to grant lower rates to Montgomery than to local stations like Troy. The court held that such competition was only one of the elements which must be considered. It did not define it as the dominating one. Experience has shown, however, that the railroads have seized upon this interpretation of the law, to justify whatever departure they please to make from the practice originally contemplated in adjusting long and short haul charges.

Although the Supreme Court decision in the Alabama Midland case, also known as the Troy case, has greatly weakened any power of supervision which the Interstate Commerce Commission might exercise in the interpretation of the fourth section, it is not without interest to note the character of some of the cases that have arisen since that time. It can not be too strongly emphasized that these decisions are practically inoperative. They represent merely the theoretical determination of what a long and short haul clause should be, and failure on the part of the carriers to acquiesce in the orders of the Commission is frequent.

VIII. THE ANTHRACITE COAL PROBLEM.

GENERAL DESCRIPTION.

The anthracite coal measures in Pennsylvania afford a clear example of a natural monopoly. Irregularly distributed over a very limited area in northeastern Pennsylvania, as shown by the appended map, these hard-coal deposits if consolidated would not cover more than 484 square miles of territory; that is to say, an area approximately 22 miles square. This anthracite coal owes its value as a fuel to the fact that the undesirable elements of sootiness and gas in the bituminous product have been eliminated by a process of natural distillation. Anthracite coal, in other words, is natural coke. The volatile elements have been driven off under the great heat and pressure to which the original and once level soft-coal measures were subjected when the Alleghany mountain range was uplifted. This is a process which has taken place only in a very few places in the world, notably in parts of Wales, France, and Switzerland. So far as is known, no other similar deposits of marketable hard coal are to be found in the United States. An inferior quality is said to exist in small quantity in Mexico, and there are deposits in Colorado. Both, so far as mined, are inferior in quality and so remote from consuming centers as not to be competitors. The coal deposits of Pennsylvania are most conveniently located, also, being intermediate between the great population and industrial centers of the country. Less than 150 miles from New York, only 100 miles from Philadelphia, 250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miles from Pittsburg, and 265 miles from Buffalo, the product can be cheaply distributed to each point of the compass.

These coal fields lie scattered over four somewhat distinct areas, known respectively as the Northern or Wyoming field, extending, as our map shows, from Carbondale south by Scranton and Wilkesbarre; the Southern or Schuylkill field, lying east and west of Pottsville; and two smaller intermediate fields known respectively as the Eastern Middle or Lehigh region about Hazelton, and the Western Middle or Mahanoy and Shamokin basins. The character of the deposits in these several fields is somewhat different. The Northern field has been worked for a much longer time, and the danger, difficulty, and cost of mining are considerably less than in the remaining territory. The main reason for this is that a large part of the Wyoming coal measures lie in a broad shallow fold not more than 1,000 to 1,200 feet below the surface, although between Wilkesbarre and Nanticoke, where a large part of the supply now remains, the measures extend as deep as 1,800 feet. In the Western Middle and also in the Schuylkill field, where the folds are much sharper, the depth of the deposits is vastly greater. The Mammoth beds, 40 feet or more in thickness, lie here as low as 2,000 feet under the ground. In the Southern field, which must of necessity constitute the bulk of the supply for the country in future years, the general depth is very great. It is estimated by Mr. Griffith, in the Bond Record for 1896, from which source much of our descriptive data is derived, that one-half of the coal in this territory is below 1,100 feet, while the Lykens Valley measures extend 4,000 feet below the surface. The Reading Company alleges that one reason for its neglect to develop its enormous reserves in this Schuylkill field lies in the relatively great cost of mining as compared with the superficial measures in other regions.

So strictly limited is the superficial area of the hard coal fields, as shown by our railroad map, and also by the later maps of each field in detail, that the actual amount of coal remaining unmined has been computed with some approximate accuracy. The last estimate made by competent geological authority in 1896 computed the marketable hard coal remaining unmined as 17,245,000,000 tons, of which not over 40 per cent could be considered as practically workable from a mining point of view. Of this amount the Schuylkill deposits contain about two and a half times as much as the Wyoming field, the northern end of which, as already mentioned, is approaching exhaustion. The Lehigh basin was computed to contain scarcely one-tenth of the amount in the Schuylkill territory. The figures above given at first sight seem to indicate an enormous, although calculable, supply for future consumption, yet at the present increasing rate of use this supply will be exhausted in approximately 100 years. Testimony upon this point before the Industrial Commission indicates the uncertainties incident

to such calculation in forecast; the duration of the coal supply ranging, according to different witnesses, from 80 to 200 years. There seems to be no great uncertainty as to the approximate amount of coal in the ground. The variable factor in the estimate as to the duration of the future supply is in the degree at which the rate of consumption will increase. The appended diagram, showing the movement of coal consumption from 1873 to 1900, indicates the rapid extension of its use within the short period of 30 years; an increase from approximately 20,000,000 to about 50,000,000 gross tons per annum. The demand seems to be increasing, according to these data, approximately at the rate of 1,200,000 tons annually.

The facts above stated show the contrast between the situation in th hard coal industry and that which prevails in the bituminous coal trade. The latter may rely upon the enormous deposits of soft coal underlying a large part of the United States between the Alleghany Range and the Rocky Mountains. In the State of Pennsylvania alone the amount of available soft coal for future consumption is probably beyond computation, irrespective of the enormous aggregate spread over the entire Mississippi Valley. This most significant and striking fact must be constantly kept in mind in any scientific treatment of the economic issues involved.

The history of the anthracite coal industry may be summarized briefly. Discovered between 1770 and 1790 by a party of hunters camping in the region, who were astounded at seeing the ground take fire, the coal seems not to have been mined until 1807. The date of the origin of hard-coal mining as a trade is commonly stated to be 1820. The "black stones" had been used for many years for other purposes, as, for instance, in Philadelphia, for the construction of gravel walks. Improvements in the navigation of the Lehigh and Susquehanna rivers contributed to the growth of shipments to Philadelphia. The Schuylkill region was not opened until about 1825, at which time the Delaware and Hudson Navigation Company was incorporated. The Lehigh Coal and Navigation Company had already been in operation some five years at this time. Canals, operated by two of the companies above mentioned, constituted the only lines of communication with tidewater prior to the construction of the railroads some thirty years later. The southern field was opened up in 1825 by the Schuylkill Canal, and the Philadelphia and Reading Railroad in 1842, which was built parallel to that waterway.

RAILROADS CONCERNED.

At the present time, as shown by the map at page 444, the anthracite coal territory is served by eight lines of railroad. The peculiarity of the situation is that more than nine-tenths of the coal deposits are directly owned by these railroads, although the mines are operated through

the agency of subsidiary coal mining companies. The relative importance of the railroads in the shipments of the product at the present time is shown by the percentage chart at page 444. The proportional investment of transportation companies in earlier years was considerably different from this showing. Since 1871, at least, the dominant railroad has been the Philadelphia and Reading, which affords the shortest and most direct connection between the field and Philadelphia. The peculiar position of this system is owing to the fact that it is a local road without through traffic such as is enjoyed by all of the other lines. Thus, for example, the Pennsylvania, Erie, Lehigh Valley, and other companies all operate through lines to the West, to Buffalo, or other points on the Great Lakes, connecting them with the great Atlantic seaports. As a result, the coal mining industry is rather incidental to their other business, due to the fact that their lines cross or pass near the place of deposit of the anthracite coal. The Philadelphia and Reading on the other hand has no other interest, with the exception of the local freight and passenger business originating within its territory.

SUBSIDIARY COAL COMPANIES.

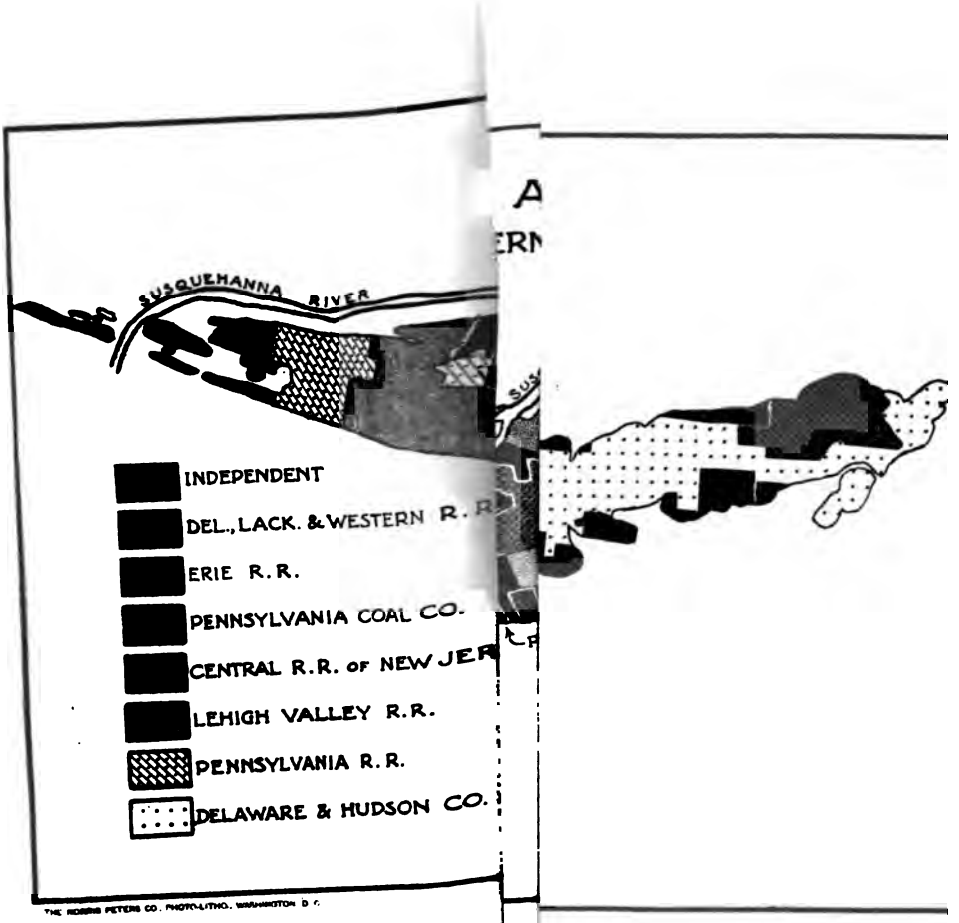
None of the railroads, with the exception of the Central of New Jersey, perhaps, and the Delaware, Lackawanna and Western, is permitted by law to operate its coal mines directly. The latter company is able to mine and ship in its own corporate capacity owing to the antiquity of its charter. The other railroads all make use of subsidiary corporations for this purpose. Thus, the Philadelphia and Reading Railroad coal is all mined by the Philadelphia and Reading Coal and Iron Company, of which it owns the entire capital stock. Similarly the Lehigh Valley Coal Company, owned by the railroad of the same name, controls its mining properties. The Central Railroad of New Jersey operates through the Lehigh and Wilkesbarre Coal Company, while the Pennsylvania Railroad operates by the agency of the Scranton Coal Company. It should be especially emphasized in this connection that the Pennsylvania Coal Company, recently bought by the Erie Railroad, stands in no relation whatever to the Pennsylvania Railroad. Since 1873 the State constitution of Pennsylvania has prohibited the further granting of such combined privileges of mining and transportation, although Pennsylvania has always been exceedingly lenient in this respect, albeit rather in interpretation than in phraseology. It is difficult to justify this system of indirect operation of the mines by subsidiary corporations of the railroad companies. Some of the greatest fiscal abuses of the time have been associated with reprehensible methods of accounting involved therein. The system has also made it possible for the railroads to discourage the development of independent coal mining by individual operators, through the practice of charging excessively high rates for the transportation of

the coal from the mines to seaboard. They have condoned this practice on the ground that they exacted the same unreasonable rates from their own subsidiary mining companies. The result of this practice has been that most of these subsidiary corporations have been apparently operated at a loss owing to the high freight charges paid on their output; but, on the other hand, it is obvious that the railroads have fully recouped themselves for these deficits by means of the corresponding profits which they have made in transportation. The net result, as shown, for example, in the annual report of the Reading Company for 1900, is that it is almost impossible to unravel the complicated cross accounts and to determine what is the actual financial condition of the several corporations.

EXTENT OF RAILROAD OWNERSHIP.

The extent of railroad investment in the anthracite coal properties is graphically shown by the series of maps herewith. According to these, the conditions of railroad ownership of coal lands vary greatly as between the several regions. In the Wyoming or Northern field ownership is very much more subdivided, the preponderant influence, as measured by extent and by the richness of the deposits, being exercised perhaps by the Delaware, Lackawanna and Western and the Central Railroad of New Jersey, although other competitors have considerable interests. The important point to notice is that the Reading Company owns none of the coal measures in this field. Its interests are almost entirely confined to the Western Middle and Schuylkill territory. This latter, comprising about one-half of the future supply, is overwhelmingly controlled by the Reading Company, especially in its southern and western parts. At the present time the bulk of its shipments is drawn from the Western Middle field, development of the vast Schuylkill deposits being reserved for future years when the other more available coal fields shall have been exhausted.

The present allotment of shipments by rail, as shown by the diagram at page 444, to which reference has already been made, shows that for 1900 the Reading Company shipped about one-fifth of the 47,000,000 gross tons transported. Individually considered, the Lehigh Valley comes next in order of importance, with a shipment of about 15 per cent, followed by the Delaware, Lackawanna and Western, with 13 per cent, and the Pennsylvania Railroad and Central Railroad of New Jersey with somewhat less than 12 per cent each. The other systems are all of less importance. These proportions in shipment have remained practically constant for a great many years, although the Reading's proportion seems to be somewhat less than it was at one time. On the whole, its proportionate shipment seems to be far less than its relative importance in the ownership of coal lands. This condition has in fact



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constituted the backbone of disturbance through many years, inasmuch as the persistent attempts of this company to increase its allotment of shipments at the expense of competitors have led to wars of rates, irregularity of prices, and other evils.

INDEPENDENT OPERATORS.

About two-thirds of the output of anthracite coal, according to testimony before the Industrial Commission, has been mined in recent years by the railroad companies above described, acting through the agency of subsidiary corporations. The remainder, variously estimated at from 30 to 34 per cent, represents the output of individual operators. This proportion has been undoubtedly reduced to a material extent by the events of the last two years, so that at present the independent production is probably less than one-fourth of the entire amount shipped. The geographical distribution of the independent operators is very unequal, as our maps of railroad ownership indicate. In the Northern or Wyoming field, in 1896, the Pennsylvania Coal Company being classed at that time as independent, the railroads controlled a far smaller percentage of the deposits than in the Schuylkill region. This latter territory was largely monopolized by the Reading Company in 1896, and now, with the absorption of the large holdings of the Central Railroad of New Jersey, east of Pottsville, and in the Panther Creek Basin, the concentration of railroad ownership is still more marked. The same condition prevails in the Western Middle field, but in the Lehigh region, as our map shows, quite a large proportion of the coal measures are controlled by two or three independent operators, particularly the firm of Coxe Brothers, which at the same time owns the Delaware, Susquehanna and Schuylkill Railroad.

As a result of this geographical distribution the proportion of coal shipments made by independent operators over the different railroad systems varies very considerably. Less than one-eighth of the coal transported by the Philadelphia and Reading Railroad is mined by independent operators; while the other extreme is represented by the Lehigh Valley Railroad, which in 1900 mined less than 3,000,000 tons out of a total shipment of 7,675,000 tons. The Delaware and Hudson Company has practically no individual operators shipping over its lines. The Delaware, Susquehanna and Schuylkill Railroad is entirely owned by the independent firm of Coxe Bros. & Co., which ships over its line in its own cars.

FREIGHT RATES TO INDEPENDENT OPERATORS.

The system of rate making in force upon the anthracite coal roads is peculiar. Instead of paying a certain amount per 100 pounds, all

shipments are made under contract for a number of years at a time. These contracts provide that the operator shall be paid a certain per cent of the tidewater price received by the railroad. Thus, on domestic and larger sizes of anthracite coal, the operators have for a number of years received 60 per cent of the tidewater price, while the railroad company reserves the remainder as payment for freight and compensation for selling expenses. The percentages upon the smaller sizes of coal, which bring a lower price, are lower. This percentage is greater than it was some years ago, when the figure was fixed at 55 per cent. The effect of the system is obviously to restrict the independence of the operators, inasmuch as it compels them to confine shipments to one or two lines of road. As a result, rates determined upon a competitive basis are by no means assured, and great complaint has existed in the past as to the unreasonable exactions of the railroads as carriers. The best expression of this feeling is found in the leading case of Coxe Brothers *v.* The Lehigh Valley Railroad Company. In this case the marked difference in rates between anthracite and bituminous coal is emphasized, as well as the contrast with those prevailing for iron ore and other heavy products.

It is difficult, under the complicated system of rate making which prevails, to institute a direct comparison at the present time, but the trend of testimony before the Industrial Commission is to the effect that the rates are from two to three times as high per ton per mile on hard coal as on the bituminous product. The railroads justify these higher rates, claiming that the product, being more valuable, is able to bear a higher rate, conformably to the general principles of classification. Moreover, it is claimed by the railroads that bituminous coal is much simpler to transport, inasmuch as it is practically uniform, while the different classes and sizes of anthracite coal have to be carefully and separately handled.

The Interstate Commerce Commission, in the leading case above mentioned, analyzed these factors fully, and decided that the rates in force in 1891 were excessive. It is significant to note, however, that an order of the commission to substitute more reasonable rates was utterly ignored by the carriers. Coxe Bros. & Co. secured more favorable treatment only after taking the matter into its own hands and constructing the Delaware, Susquehanna and Schuylkill Railroad, which enabled it to make connection with a number of different tidewater lines. Judging by the character of the testimony before the Industrial Commission, complaint by the independent operators of excessive exactions in freight rates is less rife than some years ago, especially as then voiced by the circular letters of the independent Coal Operators' Association. The change of attitude in this respect can only be accounted for on the supposition that the recent proposed concession of the railroads, amounting to an increase of the percentage

of tidewater prices paid at the mine mouth from 60 to 65 per cent, is regarded as a fair satisfaction of the demands of the independent operators.

From the public point of view the question of freight rates upon anthracite coal is becoming of less and less importance. The steady absorption of independent coal territory by the railroads tends to minimize whatever effect the freight rate might have had in the past in fixing the price of anthracite coal to the consumer. Inasmuch as the price is now made by the great railroad systems jointly, which, of course, pay no freight rates except to themselves, the question is becoming one of minor importance. A striking contrast between the emphasis in testimony before the Industrial Commission in 1901 and that which prevailed in earlier Congressional investigation can not fail to be noted in this connection. Whether the unreasonable exactions from independent operators in the past have contributed in an important degree to induce them to sell out their holdings to the railroads is a point worthy of consideration. At the present time this influence having so far produced its effect, the old controversies have been replaced by new ones of an entirely different character.

PECULIARITIES OF THE INDUSTRY.

VARIABILITY OF DEMAND.

In order to understand the reasons for the persistent attempts at consolidation of all of the anthracite coal interests during the last generation, it is necessary to consider certain peculiarities of the industry. One of the most prominent of these is the variability of demand from one season of the year to another. Anthracite coal of the prepared sizes is primarily used for domestic consumption. Demand, consequently, unlike that for manufacturing purposes, fluctuates widely as between winter and summer. If all householders were farsighted enough, they might, of course, purchase their annual supply of coal during the spring months, when prices are usually made temptingly low in order to induce a more equable demand. The fact, notwithstanding, is that the majority of domestic consumers postpone filling their bins until the first touch of frost, at which time the demand becomes excessive. The result is an alternation of periods of stagnation in the trade, with those of great activity. The collieries, moreover, must maintain a plant sufficient in magnitude to meet this maximum demand when it occurs.

The question is pertinent why the companies do not accumulate reserve stocks during the dull seasons of spring and summer. Such action is prevented for a number of reasons. In the first place, interest charges, of course, accumulate in the cost of so expensive

a product when stored in large quantities. Secondly, the difficulties of storage are very great, owing to the bulk and weight of the product, and especially to the cost of loading and unloading the cars. Coal can be far more cheaply mined and transported at one handling to market than when transferred to storage bins and thereafter reloaded. To be economically stored it must be kept on wheels, involving great expense for equipment. The final reason why it is difficult for the coal companies to accumulate stocks in advance of the seasonal demand is that hard coal deteriorates quickly in market value, though not as measured by its real value as a fuel. Coal buyers are exceedingly fastidious in demanding bright coal for delivery, and the anthracite varieties when stored, especially if subjected to moisture, speedily lose their luster and become rusty in appearance. Such coal must inevitably be sold at a material reduction from the full price. All these considerations make it imperative, therefore, that the autumn demand for coal should not be anticipated to a very great extent.

The consideration of seasonal demand above mentioned has compelled the companies to maintain operating plants at the mine mouth sufficient to meet the maximum demand at the busiest season of the year. Throughout eight months of the year, therefore, capital invested in expensive machinery must lie idle in part unless shipments can be equalized during the dull seasons by cutting prices; that is to say, each railroad or independent operator is exposed to a very strong temptation to increase tonnage during a large part of the year, at the expense of competitors, by means of secret manipulation of the price. As indicative of this peculiar situation, it is asserted that the productivity of the mines is at the present time not less than 60,000,000 tons annually, although, according to our chart, the maximum consumption has not exceeded 47,000,000 tons. It is stated by a witness before the Industrial Commission that the average number of days on which the mines have been operated during the year has never exceeded 235, while in many years the average number has been much less. It is perfectly patent, therefore, that with a fixed investment in plant any extension of the number of operating days will yield a tempting profit at more than proportional rates.

ATTEMPTS AT ALLOTMENT OF TONNAGE.

The practical effect of these peculiar conditions, historically considered, has been that great irregularity of price is engendered. The situation is entirely analogous, although perhaps in a more acute form, to rate wars between competing railroads. The only safeguard would seem to be in a practical pool of interests. The entire history of the anthracite-coal business for the last twenty-five years has consisted of repeated attempts thus to pool the output and to prevent the

disastrous effects of cutthroat competition. The railroads have sought again and again to agree among themselves upon an allotment of tonnage, so called; that is to say, an agreement by which each road should limit its output to a certain number of tons, the total production of all to be fixed at a figure which will meet the annual demand at a fair price. This suggests a still further peculiarity of the situation, namely, that there is a large and perhaps unlimited potential demand for the cheaper or so-called "small sizes" of anthracite coal, to be used for manufacturing purposes. The existence of this demand makes it possible not only for each railroad to increase its proportion of the total demand for domestic purposes, which remains at a fairly constant figure year in and year out; but also to build up an additional amount of business in the sale of small-sized coal for manufacturing or steam use.

Another difficulty in the way of all these agreements has always been the attitude of certain of the independent coal operators, that is to say, those private individuals who either own or lease coal lands and ship their product over the railroads as freight, selling it individually at tidewater for whatever price they can get. This type of individual operator, it will be noted, is distinctly different from the one described in an earlier part of this report. The majority of the independent operators is of the former class, contented to sell their product to the railroads at a fixed percentage of the tidewater price, but some of the larger independent interests have always exercised the privilege of merely paying freight and bearing themselves the risk of marketing the product. The novel element in the present attempts at consolidation is that they are directed not only toward consolidation of the great railroad systems concerned, but also toward the elimination of these troublesome independent producers, who have in the past persisted in using the price agreed upon by the railroads, merely as a figure from which to make discounts.

CONSOLIDATION PRIOR TO 1898.

EARLY ATTEMPTS.

The history of the anthracite coal business since the early part of the century has been marked by efforts to restrict production and to prescribe prices by artificial means. The first of these was induced by the attempt of the Philadelphia and Reading Railway in 1871, under the leadership of Mr. Gowen, to buy up all the independent coal lands in sight. In a short time, at an enormous cost, one-third of the coal lands of this whole region was acquired. Within six years the company was involved in a debt of $50,000,000 incurred for the purchase of these coal lands. The existence of this enormous

burden of debt upon this most important company, involving the consequent necessity of acquiring business at any cost in order to meet interest charges, serves to explain many of the subsequent events. In 1873, with a demand for 16,000,000 tons at paying prices, coupled with a productive capacity of 5,000,000 or 6,000,000 tons in excess of this figure, came the first great combination. This simply took the form of an agreement to control the amount shipped and the price, with a definite allotment under the control of the presidents of the six railroads concerned. This lasted until 1876, when certain new features were introduced. Provision was made that in case of excess of production the company at fault should pay $1.50 a ton to those which were short of their allotment.

This action, undoubtedly in violation of State laws, coupled with the stubborn independence of the Pennsylvania and Lehigh Valley railroads, broke the combination. Coal prices fell from something above $5 to less than $3 at New York. The war of rates lasted for about sixteen months. Prices scarcely more than half those which ranged under the combination prevailed at the end of 1877. In January of the following year a new attempt at combination was made, this time to include not only shipments to tidewater but inland as well. The determination of the price was still left to each company. A penalty for excess of production was to be taken from a deposit made in advance. The difficulty in this scheme lay in fixing the percentages of allotment, the Reading being particularly insistent upon an increase, on the basis of its large percentage of ownership of the unmined coal. This agreement lasted less than a year, and prices broke again, in some cases going below $2 at New York in 1879. Prosperity returned in the following year with the general revival of trade and lasted for some time.

The years 1880 to 1884 were characterized by a great increase in shipments, which, as the diagram[1] shows, rose rapidly from about 23,000,000 tons in 1880 to nearly 32,000,000 in 1883. The result of this increase in demand was that each company greatly extended its capacity and enlarged its equipment in order to participate in the increased demand. The effects were immediately apparent with the cessation of general business activity in 1884. The following year was marked by a new agreement to allot the 30,000,000 tons of demand on the old percentage plan of 1878. This time, also, there was no agreement respecting prices, while at the same time the continued independence of the Pennsylvania Railroad, which has always refused to come into any agreement, engendered bitter rivalry. Imperfect as was the success of the combination, it was renewed in 1887. Popular hostility had been aroused in the meanwhile, and investigation by the New York legislature and cases in the Pennsylvania courts, together with

[1] See p. 444.

apprehension as to the effect of the new interstate commerce act prohibiting pooling, led to the abrogation of any formal agreement. Down to 1891 business was apparently conducted on the basis of a tacit, although informal, agreement between all the parties concerned. Prosperity once more engendered a surplus productive capacity, with consequent rate cutting and rivalry. The Reading Company at this time seems to have suffered a considerable reduction in its allotment, falling from almost one-third to its present proportion of about one-fifth of the total shipments.

CONSOLIDATION IN 1890–1893.

Consolidation of all the anthracite coal properties was attempted on a novel and more comprehensive scale in 1890–1893, under the leadership of President McLeod, of the Philadelphia and Reading Railway. This attempt is of peculiar interest inasmuch as it aimed to substitute definite consolidation by lease of one railroad to another, for the looser combination hitherto prevailing by means of pooling, or an allotment of tonnage. The experience of 1892–93 is also highly significant as serving to explain the recent developments of consolidation in 1899–1901, not as then by means of lease, but now by outright purchase or stockholding control. The events of the period of 1892–93 were made the subject of two official governmental reports (Fifty-second Congress, second session, H. R. 2278, and New York senate committee, February 1, 1893). The principal obstacle at that time to a consolidation of the hard-coal roads by lease was a clause in the New Jersey constitution prohibiting the lease of the property of domestic to foreign corporations until approved by law. The Philadelphia and Reading Railway, under the plan proposed by McLeod, was to be the parent company, but its charter being derived from Pennsylvania, it was impossible to lease the Central of New Jersey or the Lehigh Valley Railroad. The Port Reading Railroad was therefore projected, to lie entirely within the State of New Jersey. This new railroad was to extend about 20 miles from Bound Brook, which was at that time the terminus of the Reading system, to Port Reading, on tidewater opposite Staten Island. In 1890 this Port Reading Railroad was organized with a capital of $2,000,000, while on the same day the Port Reading Construction Company, capitalized at $100,000, was incorporated. This construction company contracted with the Port Reading Railroad to build its line for $1,500,000 in mortgage bonds, together with practically all its capital stock.

In January, 1892, the Port Reading Railroad was still incomplete, but a few miles of single track having been laid, the road also being without rolling stock or terminals, and its stock and bonds all being in the hands of the Port Reading Construction Company. To this inchoate corporation the Central Railroad of New Jersey was leased

for 999 years, together with the right to operate its forty subsidiary companies, including all its ferries and its properties of other kinds. The Port Reading Railroad agreed in turn to pay all fixed charges and 7 per cent in dividends, as well as 50 per cent of any excess earnings above this limit. Then in addition, the Central Railroad, the Port Reading, and the Philadelphia and Reading railroads entered into a tripartite agreement, by which the first named agreed to lease to the Port Reading, if the Philadelphia and Reading, which was virtually the parent company, would guarantee the covenant; the Port Reading, on the other hand, agreeing to accept the lease if the Philadelphia and Reading road would insure the increase of traffic contemplated. On the same day the Lehigh Valley Railroad was leased to the combination, partly in order to secure its valuable coal properties, and also in order to give the new combination an outlet on the lakes. The president of the Central of New Jersey simultaneously acquired large blocks of stock in the Lackawanna road, while the president of that railroad became in turn a director in the Central Railroad. The attempted monopoly was still further to be strengthened by a proposition to independent operators to increase their percentage of tidewater price from 55 to 60, tying them up by long-time contracts on this basis.

This stupendous project was brought to naught by a combination of circumstances. Popular hostility was aroused, incident upon a sudden rise of prices for coal for domestic consumption, with the result that the attention of Congress and of the New York legislature was attracted, and investigations were ordered, as above mentioned. The validity of the leases was also attacked in the chancery court of New Jersey, and the contracts were all declared illegal by the supreme court of that State. The business absurdity of leasing a railroad valued at $70,000,000 to a tiny and but half-constructed road, worth practically nothing, was obvious to all investors. That served to arouse distrust in a new quarter. The events leading to the panic of 1893 made it difficult to secure funds for financing the deal, so that insolvency was threatened. The hostility of important financial interests was also aroused by the further attempt of the Philadelphia and Reading Railway to secure an outlet for its surplus coal shipments into New England. President McLeod purchased a controlling interest in the Boston and Maine Railroad, which serves a large manufacturing constituency, in order to attain this end.

This entrance into New England territory, while perhaps quite justifiable from a business point of view, ran counter to the interests of other railroads in which the house of J. P. Morgan and others were interested. And, finally, the necessity of purchasing the entire output of all the independent coal operators as fast as it appeared in the market involved an enormous financial strain upon the parent

company. This was a peculiarly troublesome factor, because the increased price of coal greatly stimulated the production of the minor operators. It is important to notice this fact, that the independent operators, although producing but a small proportion of the entire output, were an appreciable factor in preventing the successful consummation of this consolidation by lease in 1892, inasmuch as an important feature in the present scheme of consolidation is the elimination of these independent operators, as hereinafter described. It should also be noted that the same important financial interests which in 1892 caused the frustration of this attempted combination—J. P. Morgan & Co.—have, since 1899, been in charge of the renewed efforts at consolidation.

CONGRESSIONAL FINDINGS IN 1892.

Certain of the conclusions of the Congressional committee of 1892 are not without interest for comparison with the testimony taken by the Industrial Commission in 1901. This committee, like the Industrial Commission, was not able to develop any direct stipulation, contract, agreement, or arrangement between the transportation companies for fixing either the output or the price of anthracite coal. The committee concluded that it was not necessary to find documentary evidence in order to determine the existence of a practical combination to regulate prices. Such a combination, growing out of the environment of the situation and due to a practical unity of interest among all parties concerned, may lead to concerted action which requires no legal or written stipulation for binding the parties together.

It was the conclusion of this committee that the railroad companies were practically parties to a combination to control the output and to fix the price for hard coal; and that, moreover, this combination was not confined to the Philadelphia and Reading, the Central of New Jersey, and the Lehigh Valley railroads, but embraced all the companies connecting the fields with tidewater as well. The facts upon which this committee based its conclusions were somewhat as follows: First, that each transportation company sent a representative to regular monthly meetings which, while informal and without minutes, were regular in their occurrence; secondly, that on the basis of understandings arrived at in these meetings concerted action by all companies was secured; third, that any refusal of recalcitrant independent operators to conform their output to the policy outlined was blocked by withholding the cars necessary to transport such excess production; and fourth, that these meetings served to explain why the output of coal is annually about 10,000,000 tons less than the total productive capacity of the mines. The committee was unable to decide as to what the demand would be at lower prices, but they concluded that the public would not absorb the entire possible output at the price then fixed.

If, on this point, criticism of the findings of the Congressional committee of 1892 is in order, it would appear that the peculiar seasonal variation of demand, described in an earlier part of this report, was not sufficiently considered as a factor in the situation. The final conclusion of the committee was that the price of coal had been advanced by the combination within ten months, in the kind most consumed by housekeepers, upward of $1.25 per ton; and that, moreover, the independent operators were being gradually eliminated by reason of the exorbitant freight rates which the railroad companies charged for hauling their product.

The years 1894 and 1895 were most unfortunate for all the anthracite coal roads. The bankruptcy of the attempted Reading combination and the continued insolvency of the parent company, enabling it to operate without any attempt at earning interest on its obligations, pushed competition to a ruinous extreme. An attempt at a renewal of the old allotment was made in 1896, but the experience at this time, as well as of all the preceding years, was that such a pool, which was in the nature of things secret, could not prevent the recurrence of the old abuses. It was freely predicted at that time that the only logical outcome would be a renewal of the attempt at actual combination, such an attempt to be made upon the basis of purchase and not of lease, while at the same time the project should be financed by banking interests competent to provide the enormous amount of necessary funds.

THE CONSOLIDATIONS OF 1900–1901.

Certain phases of the recent notable tendency toward consolidation among the railroads of the United States have already been noted in an earlier portion of this report. This tendency has been peculiarly marked in the case of the anthracite-coal properties. It has assumed two distinct phases. The first of these, namely, the elimination of independent operators, involves merely a repetition of the methods employed nine years earlier; while the second, railroad consolidation by purchase, aims to substitute this more definite action for the elastic and hitherto illegal policy of combination by lease. These two features of the present situation deserve consideration separately.

ELIMINATION OF INDEPENDENT OPERATORS.

The principal event connected with the attempted elimination of coal production independent of the transportation companies has consisted of the purchase of the Pennsylvania Coal Company by the Erie Railroad. This Pennsylvania Coal Company, as our map of the Wyoming region indicates, controls some of the most valuable properties in

the heart of the richest field. Its production is not proportionately great, amounting to slightly less than 5 per cent of the total shipments for 1900. Its importance is due rather to the fact that its reserves for future production are great, and also that it was the largest of the single companies still independent of the railroads. Its independence has also in a measure been accentuated by the fact of its ownership of a connecting road, the Erie and Wyoming Valley, with an outlet at Hawley on the Erie system.

Some three years ago the independent operators who, as we have already seen, are most important in the Northern field, projected an independent connecting railroad line, with a view to securing lower and more equable freight rates to tidewater. The earliest of these attempts was frustrated by the purchase of many of the mines which had pledged tonnage to this road through the agency of the Temple Iron Company. A second attempt was also made to secure an outlet to tidewater by the construction of a railroad following the abandoned Delaware and Hudson Canal to Kingston, on the Hudson River. The Pennsylvania Coal Company was an important factor in this enterprise. Thus, to the leading incentive of eliminating the most important of the independent operators by the purchase of the Pennsylvania Coal Company, was added the advantage arising from a frustration of this projected construction of an independent railroad to tidewater. The opposition of the established railroads to any such attempt at new construction was manifested also by the New York, Ontario and Western Railway, which proceeded to buy up all the independent operators who had agreed to ship over this new road in case it were built.

The purchase of the Pennsylvania Coal Company was made by the Erie Railroad through the mediation of the banking house of J. P. Morgan & Co. Agents traversed the entire northeastern region of Pennsylvania for months, purchasing shares in the coal company for whatever price was necessary in order to give control. The company had been paying about 16 per cent dividends, and with a capital of $5,000,000 had accumulated a surplus of twice that amount, so that the price asked for the stock was obviously not low. It is reported that the average price paid by J. P. Morgan & Co. was $552 a share. This property when purchased was then turned over to the Erie Railroad in return for $32,000,000 of 4 per cent fifty-year collateral trust bonds, secured by the property of the Pennsylvania Coal Company and also by the New York, Susquehanna and Western Railroad Company, recently acquired by the Erie. In addition to this, the plan provided for an issue of $5,000,000 of preferred stock. Criticism has been directed against this operation on the ground that the price paid by the Erie Railroad to J. P. Morgan & Co. was excessive. Testimony before the Industrial Commission indicates that this was in fact

the highest price paid for such properties in the history of the business, judged on the basis not of acreage, but according to ton of output. On the basis of a similar valuation the coal lands of the Reading Company would be worth $125,000,000, as against a present estimate on the books of the company at the last reorganization of only $70,000,000. On this basis it will cost the Erie Railroad 4 per cent on $32,000,000 of bonds, plus dividends on five millions of preferred stock, or approximately 60 cents a ton on the output at the old rates. While this amount may not necessarily be added to the price of coal, since the proportion produced by this company is small, it would seem that it might tend to reduce the profits of the purchasing company in the end. One favorable feature of the transaction, however, is that it is not one merely involving the consent of a bare majority of the stockholders, but that practically 99 per cent of the old shareholders of the Pennsylvania Coal Company participated in the advantages of the transaction. To what amount the bankers' profits rose was not developed in the testimony before this Commission.

The elimination of the independent coal operators was attempted in a second way, namely, by securing forfeit of their independence of action by means of long-time shipping contracts with the railroads. Reference has already been made to the fact that the proportion of tidewater price allowed had been increased from 55 to 60 per cent by contracts made some years ago. Most of these contracts terminating in 1901, it was proposed by the railroads that a uniform new contract be offered in renewal by all the railroads jointly, on the basis of an increase of the percentage to 65 per cent of tidewater price. On the other hand, in return for this decidedly favorable offer, the operators were to bind themselves to ship over no other roads during the entire life of their properties; that is to say, until the mines should have been entirely worked out. This is a notable departure from all previous forms of contract, which had been made for a definite term of years. Inasmuch as the proportion of independent coal output has been decreasing for many years, such contracts as this would finally dispose of the small fraction now in existence. It would forever remove a most disturbing factor in any attempt by the railroads to fix among themselves both the amount of output and the price. Probabilities pointed strongly, at the time of the investigation by the Industrial Commission in the spring of 1901, toward voluntary acceptance of these contracts by an overwhelming proportion of the independent operators; but later advices show that the arrangement is likely to fall through. The clause providing for permanent sacrifice of independence seems to have aroused the greatest opposition. Whether a renewed attempt under more favorable conditions will be made, subsequently, remains to be seen.

RAILROAD CONSOLIDATION.

The second factor in the recent tendency toward monopolistic combination in the anthracite field, viz, actual railroad consolidation, has been the purchase of the Central Railroad of New Jersey by the Reading Company. Reference has already been made to this event in an earlier part of this report. In January, 1901, the Reading Company purchased 145,000 shares in a total of 272,138 shares of the capital stock of the Central Railroad of New Jersey, the price paid being $160 per share. This was financed by the issue of 60,353 first preferred, and 34,275 second preferred shares of stock, together with the issue of $23,000,000 of 4 per cent collateral trust bonds due in 1951, secured by the deposit of the shares of the Central Railroad purchased, as well as by 29,900 shares of the capital stock of the Perkiomen Railroad and 4,400 shares of the capital stock of the Port Reading Railroad. Although, according to competent testimony before the Industrial Commission, the price paid to the banking house of J. P. Morgan & Co., which secured control of the shares before reselling them to the Reading Company, was the highest in the history of the Central Railroad of New Jersey, the advantages to the Reading from such a consolidation are most patent.

Inspection of our maps of coal lands reveals the importance of the holdings of the Central Railroad, particularly in the Southern and Middle fields. The shipments of the Central Railroad, moreover, constituted last year, as the diagram at page 444 shows, nearly 12 per cent of the total output of all the railroads. The combination of these two railroads, therefore, gives to the Reading Company directly the control of nearly one-third of the total shipments on the basis of the allotment of 1900. A direct line from the Schuylkill field to tidewater is also afforded, as seen by the map of the anthracite coal railroads, thereby greatly lessening the length of haul which the Reading Company was formerly compelled to make to reach New York by way of Philadelphia. This, at the same time, relieves the main lines of the Reading Company of this class of traffic. Its general business has developed greatly during the last few years. Whereas at one time 65 per cent of its tonnage was coal, the proportion has fallen to about 40 per cent at the present time. The main lines of the Philadelphia and Reading, therefore, can devote greater attention to the development of this miscellaneous business, leaving the direct route to New York to the Central Railroad as a special outlet for its anthracite coal traffic.

The advantages of the transaction to the parent company are of still greater importance for the future than at the present time. The reserve supply of the Central Railroad is the largest and richest except that of the Reading Company itself. This is manifest from the following statement in the Bond Record for 1896, made upon the basis

of the investigations of the Pennsylvania Coal Waste Commission. Judging by shipments of 1895, the Ontario and Western Railroad had at that time but nine years' supply. It has considerably increased this reserve by purchases in connection with the events of the last two years, as already described. The Erie system owned twenty-one years' supply, and acquired, by the purchase of the New York, Susquehanna and Western, eighteen years' supply of that company. The reserves of the other companies were as follows: Delaware and Hudson, twenty-six years; Pennsylvania Coal Company, fifty-four years; Delaware, Lackawanna and Western, fifty-four years; Pennsylvania Railroad, sixty-three years; Lehigh Valley, one hundred and sixteen years; and the Reading Company, two hundred and sixteen years. The average of all these companies gives a figure of one hundred and nine years, which is interesting for comparison with the testimony before the Industrial Commission, to which reference has already been made. On the basis of this evidence, the importance of the consolidation of the Reading and the Central of New Jersey becomes at once apparent. It is confirmed, furthermore, by the last annual report of the Reading Company, which concludes with the following complacent statement to its stockholders, that—

> The acquisition of the control of the Jersey Central, is not only of enormous advantage because of the additional facilities given to the system, but through its acquisition the Reading system now owns and controls about 63 per cent of all the unmined anthracite coal in the State of Pennsylvania.

COMMUNITY OF INTEREST.

It is not clear, either from testimony before the Industrial Commission or from other information available, what degree of actual consolidation by exchange of stock holdings prevails among the other roads in the anthracite field. Considerable evidence tends to show that effective control by unity of stock ownership is given to a large proportion of the entire output of the field. Thus, the Lehigh Valley Railroad, since J. P. Morgan & Co. took up their option on the stock of that company held by the Packer estate, is quite certainly controlled by the same financial interest which entirely dominates the Reading Company. The Erie system also is understood to be a Morgan road, despite rumors to the effect that the Hill interests in the Northwestern transcontinental lines had secured control. The Erie road, through its acquisition of the Susquehanna and Western, and the purchase of the Pennsylvania Coal Company, now controls more than 11 per cent of the total output. The Lackawanna road, with its 12 per cent of shipments in 1900, is an important factor, but its definite relation to the Morgan interests has not been made clear. Its substantial unanimity of interest with the roads previously named is, however, apparent. While for many years the Pennsylvania Railroad

has persisted in independent action, and while the Delaware and Hudson Company is usually credited with Vanderbilt affiliation, the proportion of the total output more or less directly controlled by the Morgan interests is probably from two-thirds to three-fourths of the entire shipment. The only roads which, it is maintained with showing of authority, are entirely independent are the Ontario and Western, and the firm of Coxe Brothers, which owns the Delaware, Susquehanna and Schuylkill. These two roads together, however, control but slightly over 7 per cent of the total shipments.

THE EFFECTS OF CONSOLIDATION.

On the basis of all this evidence it appears that the trend toward consolidation by actual purchase, not only of one railroad by another, but of independent coal holdings by the railroads, together with the extension of the community of ownership idea, is unmistakable. It can not be long before the anthracite coal business of the United States, in all its enormous extent and commercial value, will be entirely monopolized by a few powerful financial interests. The only safeguard for the public against exorbitant prices must be found either in the competition of other fuels, in enlightened self-interest on the part of the railroads, or in the immediate application of governmental regulation. Competition between either the producers of anthracite coal or the railroads which transport their product can no longer be regarded as of the slightest effect. Any discussion which does not proceed upon this assumption is bound to be futile and misleading. Competition can not be perpetuated. It has disappeared apparently once and for all. It is important, therefore, at this point to distinguish between the advantages and evils which such a condition both of natural and of artificial monopoly entails.

LIMITATION UPON HIGH PRICES.

There is much evidence to show that an effective bar to extraordinarily high prices for anthracite coal exists in the competition of other fuels, such as the bituminous product, natural and artificial gas, etc. The effectiveness of this competition is shown by the fact that, whereas the output of hard coal has greatly increased during the last thirty years, the consumption of bituminous coal has enormously outstripped it in the rate of increase. While a few years ago the two varieties of fuel were consumed in about the same quantity, the output of bituminous coal is now more than three times as great as that of anthracite. The effectiveness of this competition between hard and soft coal is limited, however, to those sizes of anthracite which are used for manufacturing purposes. And it is particularly in the so-called "small sizes" of anthracite coal, such as pea, buckwheat, and rice, that the largest propor-

tion of increase in consumption in recent years has taken place. Thus the consumption of "prepared sizes," those which are for domestic and not for manufacturing use, suffered an absolute loss of over 12 per cent in the Eastern and Middle States from 1883 to 1893. This, in the eastern half of the United States, is due to the direct competition of bituminous coal for use in manufacture. The price of these small sizes of hard coal must be consequently less than those for the prepared sizes, in spite of the fact that they sometimes cost more to produce. In 1896 about one-third of the total output consisted of "steam sizes" sold at a sufficiently low price to meet this competition. The relative loss on this size is made up by the operators on the profit accruing from the sale of the "prepared sizes," such as stove, nut, and furnace, which are sold for domestic consumption.

STATISTICS OF PRICES.

Consideration of the price statistics of anthracite coal for the last ten years shows that the present range at tidewater is very much higher than in 1898–99, although it has not yet attained a level as high as during the years 1891–1893, during which the former attempt at wholesale consolidation by lease was being made. Prices during the present year are in part a reflection of the coal strike in the fall of 1900. A range of from 20 to 30 cents higher than during the corresponding periods last year is indicated. Many witnesses, among them representatives of the operators themselves, assert that any further increase of price would undoubtedly operate to restrict the demand. There is much expert testimony to show that a difference in price between hard and soft coal greater than $2.50 or $3 per ton profoundly affects the total consumption. Soft coal prices are undoubtedly the ultimate regulators of the price of hard coal, although it is probable that the influence is less marked in the case of the sizes for domestic use, as has already been noted. On the other hand, certain economic changes have tended in recent years to restrict naturally the consumption of hard coal even for household purposes. Prominent among these is the growth of apartment houses, which, being heated by steam, supplant a considerable demand for hard coal to be burned in individual stoves and grates. The gas stove, particularly in the great cities, is also displacing anthracite coal, and all such experiments as are now being made by the New England Gas and Coke Company in the production of a cheap fuel made from Canadian coal certainly tend to restrict consumption. An effective bar to prices very much higher than those which prevail at this time seems therefore to exist. On the other hand, it is not clear whether, despite the fact that the maximum price is thus fixed, the price for domestic use may not range from 30 to 50 cents higher than it otherwise might, by reason of the existence of wholesale combination among the producers.

Whatever the range of present prices is, it seems certain that, as years go by, the price is likely to remain at its present or even at a higher figure. The surface deposits are being largely worked out. Before many years it will be necessary to develop the deeper measures, which can only be mined at a greatly increased cost by reason of danger from water, gas, and other factors of a technical nature incident to mining at great depths. One reason asserted by the Reading Company for holding its reserves in the Schuylkill field so largely undeveloped is that it has been impossible to produce from that region in competition with the operators in the Northern fields, where the expense of mining was so much less. With a greater and greater concentration of mining in the more difficult portions of the field, the price may naturally be expected to rise. On the other hand, the companies which have for years been carrying these reserve lands at the expense of present consumers, should be expected to relieve themselves gradually of this incubus by appropriate methods of finance. It is indubitable that the financial distress of the Reading Company and the long chronicle of bankruptcy, receivership, and reorganization of others of the anthracite coal roads, have been due in part to the fact that the companies have made their reserves for future years a charge upon present income. If by means of reserve fund operations they can be relieved in part of this burden as development proceeds in the reserved lands, it would seem that the public had a right to expect an advantage therefrom in a decrease of price. Whether this deserved decrease of price will do more than offset in part the increased cost incident to mining at greater and greater depths, the future alone can determine.

PRESERVATION OF THE FUTURE SUPPLY.

This brings us then to a final consideration of profound significance to the people of the United States as a whole. Inasmuch as the supply of this high-grade fuel is strictly limited, and is bound to be exhausted within a few generations at the present increasing rate of consumption, it seems highly desirable that its use should be restricted so far as possible to domestic consumption. Its use for manufacturing purposes on a large scale, if it involves other than the utilization of steam sizes as a by-product incident to the production of the prepared or household sizes, would seem to be a waste of one of our most valuable natural resources. There is an abundance of soft coal for these purposes. Such use for manufactures to any increasing degree must the more speedily exhaust the supply available for domestic consumption. Were the anthracite-coal producers to resort once more to ruinous competition, thereby depressing the price of coal to perhaps two-thirds of its present figure, an enormous increase in consumption for factories or similar purposes must result. Any development of the coal fields which

shall so fix the price as on the one hand to prevent extortion, and on the other to offer a safeguard against such low prices as entail waste, may be heartily welcomed. It is not impossible that combination under proper supervision may be able to prevent waste in this way, to economize transportation to markets, and to prevent useless duplication of profits and commissions to middlemen. As a return for this service a fair profit upon the actual capital involved would seem to have been earned. On the other hand, the public has a right to expect that the actual capital invested shall be considered as a basis, and not that maladministration in the past, or future profits dependent upon monopolistic extortion, shall be made the basis either of capitalization or of dividends. A liberal policy in this respect on the part of the railroads does not seem altogether probable, judging by the events of the last thirty years, but it is always possible that enlightened self-interest may recognize that any continuation of the present experiment of monopolistic control must depend upon the toleration and acquiescence of the public. A short-sighted policy of extortion must certainly lead to remedial legislation at the hands of Congress and of State legislatures. Outraged public opinion would speedily demand redress in some form or other. A comprehensive development of these great natural resources along definite lines of policy looking to the preservation of the future supply, and its utilization for those purposes for which it is pecularly suited, seems theoretically to be most desirable. Whether it can be realized in practice will depend upon the wisdom and conservatism of the great interests which have it in charge.

IX. LAKE TRANSPORTATION.

GENERAL CHARACTER AND IMPORTANCE.

The commerce of the Great Lakes is primarily coastwise trade among the lake ports of the United States. It is therefore subject to the protective statute of 1817, as follows:

SECTION 4 (act of 1817). That no goods, wares, or merchandise shall be imported under penalty of forfeiture thereof, from one port of the United States to another port thereof, in a vessel belonging wholly or in part to a subject of any foreign power; but this clause shall not be construed to prohibit the sailing of any foreign vessel from one to another part of the United States: *Provided*, no goods, wares, or merchandise, other than those imported in such vessels from such foreign port, and which shall not be unladen, shall be carried from one port or place to another in the United States.

In volume and character the lake traffic is peculiar to the sections of country connected by these great waterways. The geographical position of the Great Lakes is such as to connect the primary grain

markets and the ore mines of the Northwest with the manufacturing States of the East. The distance between the head of the lakes and Buffalo is 997 miles. At Duluth the spring wheat finds access to this eastward waterway. Chicago reaches south into the heart of the corn belt. On both the southern and northern shores of Lake Superior the more important ore docks are located, from which the chief supply of ore is shipped to the numerous iron and steel industries at Pittsburg and vicinity, on the lower lake shores generally and south and east of Chicago. The east-bound movement greatly exceeds the west-bound. During the season of 1900, out of a total freight movement of 25,643,073 tons through the Sault Ste. Marie canals, 20,532,493 tons were east bound and 5,110,580 tons west bound. The character of the traffic passing through this connecting link between Lakes Superior and Huron may be gathered from the following official tables covering the season of 1900:

East and west bound commerce passing canals at Sault Ste. Marie, Mich., and Ontario, for the season of 1900.

EAST BOUND.

Items.	United States canal	Canadian canal.	Total.
Copper.....net tons..	126,671	4,395	131,066
Grain.....bushels..	15,042,161	1,022,064	16,064,225
Building stone.....net tons..	48,912	4,990	48,902
Flour.....barrels..	6,123,246	631,630	6,754,876
Iron ore.....net tons..	15,439,617	1,003,951	16,443,568
Pig iron.....do....	19,985	90	20,075
Lumber.....M feet B. M..	898,093	11,558	909,651
Silver ore.....net tons..	110	.....	110
Wheat.....bushels..	31,325,693	9,163,609	40,489,302
General merchandise.....net tons..	65,875	20,458	86,333
Passengers.....number..	16,965	12,233	29,198

WEST BOUND.

Coal, hard.....net tons..	476,131	39,384	515,515
Coal, soft.....do....	3,488,558	482,904	3,971,462
Flour.....barrels..	212	5,600	5,812
Grain.....bushels..	26,084	84,350	110,434
Manufactured iron.....net tons..	97,101	18,409	115,510
Salt.....barrels..	318,358	10,537	328,895
General merchandise.....net tons..	394,885	60,179	455,064
Passengers.....number..	19,348	10,009	29,357
Freight—			
East bound.....net tons..	19,102,494	1,429,999	20,532,493
West bound.....do....	4,504,860	605,720	5,110,580
Total.....	23,607,354	2,035,719	25,643,073
Vessel passages.....number..	16,369	3,083	19,452
Registered tonnage.....net tons..	20,136,782	2,179,052	22,315,834

NOTE.—In addition to the above traffic 15,400 cords pulp wood and 8,500,000 feet pine logs passed over the rapids bound for lower lake ports.

The Sault Ste. Marie Canal was formerly under the control of the State of Michigan, the foresight of whose public men led them to cut a canal around the falls on the American side for the purpose of con-

necting ports on the upper and lower peninsulas. By 1880 it became apparent that this connecting waterway was so largely of value to interstate commerce as to make it highly advisable to transfer its control, improvement, and management to the Federal authorities. The canal has since then been regularly in charge of a member of the engineering division of the United States Army.

On the Canadian side of the St. Marys Falls another canal was opened for traffic September 9, 1895. In subsequent statements of statistics furnished by the engineer in charge of the American canal the figures of both the American and Canadian canals are given.

The construction of the Sault Ste. Marie Canal has made it possible to measure the lake trade between the upper and the lower lakes for a series of years, both as to the amount of freight carried annually and the registered tonnage of vessels. Between 1881 and 1886 the registered tonnage more than doubled; by 1890 it had grown to four times the tonnage of 1881; by 1895 six times, and by 1900 eleven times that of 1881. The number of vessels had reached 4,000 in 1881; by 1890, or within ten years, it had grown to 10,557, and by 1899 to 20,255 vessels. The total freight carried advanced even more rapidly than the rate of increase either in the vessels or in the registered tonnage. From 1,500,000 in 1881 it increased to 9,000,000 tons in 1890 and to nearly 26,000,000 in 1900. The growth of volume of commerce, as measured by this movement through the canal, for the period of twenty years, from 1881 to 1900, is given in the following table:

Growth of volume of commerce, as measured by the Sault Ste. Marie canals.

Year.	Total freight.	Registered tonnage.	Vessels.	Year.	Total. freight.	Registered tonnage.	Vessels.
1881	1,567,741	2,092,757	4,004	1891	8,888,759	8,400,685	10,191
1882	2,029,521	2,468,088	4,774	1892	11,214,333	10,647,203	12,580
1883	2,267,105	2,042,259	4,315	1893	10,796,572	8,949,754	12,008
1884	2,874,557	2,997,837	5,689	1894	13,195,860	13,110,366	14,491
1885	3,256,628	3,035,937	5,380	1895	15,062,580	16,806,781	17,956
1886	4,527,759	4,219,397	7,424	1896	16,239,061	17,249,418	18,615
1887	5,494,649	4,897,598	9,355	1897	18,982,755	17,619,933	17,171
1888	6,411,423	5,130,659	7,803	1898	21,234,664	18,622,754	17,761
1889	7,516,022	7,221,935	9,579	1899	25,255,810	21,958,347	20,255
1890	9,041,213	8,464,435	10,557	1900	25,643,073	22,315,834	19,452

INTERLAKE AND LOCAL TRAFFIC.

The traffic from one lake to another is recorded in such a manner as to show the relation between Lake Superior and the other lakes. It thus appears that the greater proportion of the freight moves between Lake Superior and Lake Erie; 86 per cent of the east-bound tonnage passing through the Sault Ste. Marie canals was bound for Lake Erie ports in 1900, and nearly 96 per cent of the west-bound tonnage originated at Lake Erie ports and was destined for Lake Superior ports.

Movement of east and west bound freight.

EAST BOUND.

From Lake Superior ports to—	Net tons.
Lake Michigan ports	2,054,819
Lake Huron ports	659,405
Lake Erie ports	17,604,773
Lake Ontario ports	213,496
Total	20,532,493

WEST BOUND.

To Lake Superior from lower lake ports—	Net tons.
Lake Michigan ports	73,841
Lake Huron ports	130,333
Lake Erie ports	4,890,938
Lake Ontario ports	15,468
Total	5,110,580

Local traffic on the Great Lakes is comparatively undeveloped, with the exception of the traffic on Lake Michigan and Lake Erie. Nearly the whole of the commerce moved is carried from one end of the system to the other. About four-fifths of the iron ore mined in the Lake Superior region is transported to Lake Erie ports, and nearly the whole of the remaining fifth is taken to Milwaukee and Chicago. The local traffic on Lake Michigan consists mainly in the cross-lake traffic of the railroads having termini on both sides. The cars are loaded bodily on car ferries and taken across from one side to the other. Manitowoc, Milwaukee, Kewaunee, Menominee, Marinette, and Gladstone on the western side, and Frankfort, Ludington, Muskegon, and Ottawa Beach on the eastern side, enjoy the most of this traffic. Lake Michigan is the only lake that is open to navigation all the year.

In point of local traffic the southern shores of Lake Erie have developed package freight lines between themselves and Buffalo at the one end and Detroit at the other. The fastest steamers on this body of water connect Cleveland with the above terminal ports. For a long time lake passenger and packet lines were successfully operated in competition with railroads, but such is not now the case. Such traffic is chiefly conducted by steamship lines in intimate relations with or under the control of the railroad lines. These are really collectors and distributers of freight, acting as an extension of the scope of railroad territory. Most, if not all, of the trunk lines have their lines of steamships which make regular connections with upper lake ports and with the terminal ports on the lower lake shores.

On Lake Michigan, centering at Milwaukee and Chicago and points farther north on both coasts, for the whole year round local traffic is carried on in connection with the railroads. Constant communication between the east and the west coasts is maintained in spite of ice by

steam-driven car floats, constructed so as to break their way, even in the coldest weather.

The main movements of traffic occur between the upper lake ports on the one hand and the lower lake ports, south of the St. Clair River, notably Detroit, Toledo, Cleveland, Ashtabula, Conneaut, Erie, and Buffalo, on the other. No accurate statistics of the traffic movements on the whole lake system are available for the period prior to 1889.[1]

The season of lake navigation is about eight months in length. It usually opens in the latter part of April and closes in the early part or about the middle of December. Movements from the upper lakes are dependent on the opening of the connecting straits. The Straits of Mackinac are usually covered with ice during the closed season of navigation and freight movements from Chicago, Milwaukee, and other Lake Michigan points are detained until the prospect of passing the straits is practically assured in the spring. From Lake Superior points southward to the lower lakes the season of navigation opens and closes with the opening and closing of the Sault Ste. Marie Canal.

Nearly all the commodities handled on the lakes may be classed under the head of raw materials. The chief articles of traffic from the upper lakes eastward are flour and grain, iron ore, and lumber. Westward the traffic is primarily coal, salt, and general merchandise. Owing largely to the small number of articles which can be handled in bulk rapidly, and of which a large amount enters into trade at a few points, the traffic operations on the lakes have been developed in a manner found in no other part of the world. In the first place, the size of vessels has been greatly enlarged in order to carry a greater bulk at lower cost per unit. Secondly, the terminal facilities for handling these leading articles have all been enlarged and improved by mechanical equipments, making it possible to load and unload rapidly and therefore to increase the number of trips which a vessel may make between ports in a season. To these causes more than any other is to be attributed the rapid development of the shipping on the lakes and the traffic movements that have called the tonnage into existence.

PRESENT STATUS OF THE LAKE GRAIN TRADE.

If flour be included with grain, the value of this grain and flour shipped from the upper lakes in 1900 was 22 per cent of the total value of freight passing through the Sault Ste. Marie canals. From Chicago grain and flour shipments by lake have varied according to the intensity of railroad competition. During the sixties the figures

[1] Statistics now being compiled in monthly reports by the Treasury Bureau of Statistics cover, for the first time, practically the entire lake trade, including, for August, 1901, 116 receiving points and 222 shipping points.

of rail and lake shipments eastward indicate that the railroads cut deeply into lake tonnage in both flour and wheat. Thereafter the advantage in east-bound flour shipments remained with the railroads until the present day. Not since 1865 have lake shipments of flour exceeded those sent over the trunk lines to the East. In wheat shipments eastward from Chicago the case is different, the lakes never having lost their position of primacy, except for a year at a time. Occasionally, when competition among railroads was carried on with a cutthroat recklessness, as in 1876, or when a failure in crops precipitated a struggle for tonnage, the roads have reached out to control the grain movement from the field to the seaboard in their own interests at any cost. As a rule, however, the lakes have been gaining rather than losing in competition with the railroads from Chicago.[1] Conditions have developed as recently as a season or two ago, by the change in the current of the Chicago drainage canal, which render the handling of vessels at Chicago to and from elevators much more hazardous than formerly. This has increased insurance charges. The southwestward trend of the winter-wheat belt and the activity of the Gulf roads for a share of the trans-Mississippi traffic in grain have both tended to reduce the grain movement by lake from Chicago. Nevertheless, the entire grain movement from Chicago, including wheat, corn, and oats, has, with the possible exception of oats in later years, been by water in increasing proportion.

Buffalo receives by far the larger proportion of the grain coming down the lakes. For this reason the figures for arrivals of grain and flour for eastward distribution at this port are representative of the general movement. For each season, to September 30, since 1877, the flour receipts, grain received, and grain including flour are stated below, showing the comparative progress in volume of trade for this portion of the season.

Lake receipts of flour and grain at Buffalo, by seasons, to September 30.[2]

Year.	Flour.	Grain.	Grain, including flour.[3]	Year.	Flour.	Grain.	Grain, including flour.[3]
	Barrels.	*Bushels.*	*Bushels.*		*Barrels.*	*Bushels.*	*Bushels.*
1901	6,808,200	77,016,807	111,057,807	1888	3,302,248	55,221,034	71,732,274
1900	7,289,722	98,446,081	134,894,691	1887	2,739,493	60,746,740	74,444,205
1899	5,440,885	95,810,202	123,014,627	1886	3,166,703	53,427,169	69,010,684
1898	6,129,047	133,149,078	163,794,313	1885	1,606,879	37,214,208	45,248,603
1897	7,512,387	128,156,616	165,718,551	1884	1,667,302	37,606,439	45,942,944
1896	5,879,719	103,545,640	132,944,235	1883	1,508,154	48,657,469	56,198,419
1895	5,013,559	63,131,385	88,199,680	1882	1,196,254	34,531,725	40,572,995
1894	7,167,105	67,011,063	102,846,588	1881	728,678	46,151 519	49,704,909
1893	6,258,992	90,494,129	121,789,089	1880	877,878	78,722,617	83,112,007
1892	6,574,445	92,346,612	125,218,837	1879	588,609	48,654,358	51,597,403
1891	4,140,451	79,776,521	100,478,776	1878	591,690	56,379,308	59,337,758
1890	3,739,111	64,756,472	83,168,311	1877	404,095	37,620,812	39,641,307
1889	2,956,343	62,509,670	77,732,385				

[1] For fuller discussion of conditions down to 1897, see House Doc. No. 277, Fifty-fifth Congress, second session, on statistics of lake commerce, including the excellent report by Mr. G. G. Tunnell.
[2] From the reports of the Buffalo Merchants' Exchange.
[3] A barrel of flour is reckoned as equivalent to 4½ bushels of wheat.

Increase in tonnage has favored if not caused the downward tendency in rates. It was not until 1890 that wheat freight rates averaged less than 2 cents per bushel from Chicago to Buffalo. With that year the total receipts of grain, including flour, first exceeded a hundred million bushels. Below is given the average annual rate since 1860:

Average rates on wheat per bushel by lake from Chicago to Buffalo.

Year.	Rate.	Year.	Rate.	Year.	Rate.
	Cents.		*Cents.*		*Cents.*
1860	9.89	1874	4.03	1888	2.56
1861	11.53	1875	3.42	1889	2.51
1862	10.49	1876	2.90	1890	1.96
1863	7.51	1877	3.72	1891	2.38
1864	9.58	1878	3.07	1892	2.19
1865	9.78	1879	4.74	1893	1.66
1866	12.34	1880	5.76	1894	1.27
1867	6.67	1881	3.44	1895	1.97
1868	7.14	1882	2.50	1896	1.70
1869	6.81	1883	3.41	1897	1.56
1870	5.88	1884	2.18	1898	1.53
1871	7.62	1885	2.02	1899	2.71
1872	11.46	1886	3.68	1900	[1]1.79
1873	7.62	1887	4.13		

The charges for shoveling, trimming, and tallying weights amounted to $4.34 per 1,000 bushels in 1900.

From Duluth to Buffalo the water rate is somewhat higher than from Chicago, chiefly because there is less railroad competition than at Chicago. The difference is, however, quite small and apparently decreasing.

Range of lake freight rates on wheat from Duluth to Buffalo.

Year.	Rate.	Year.	Rate.
	Cents.		*Cents.*
1900	2.0	1892	2½ to 4
1899	3.6	1891	1¾ to 9½
1898	1.8	1890	2 to 5
1897	1.75	1889	2 to 5
1896	2.12	1888	2 to 5
1895	3.50	1887	2 to 8
1894	1¼ to 3	1886	3¼ to 8
1893	1¼ to 3¼		

The practice is to accumulate grain in the storage elevators at Duluth during the closed season of navigation and to ship at the earliest opportunity, continuing until November 15, when the insurance rates are increased.

IRON-ORE MOVEMENT FROM THE UPPER LAKES.

Approximately 20,000,000 net tons of iron ore are now carried by lake from the Lake Superior region each season of navigation. This is about 75 per cent of the total consumption of the country during the year. There are six great ranges of ore mines, including the Michipicoten range in Canada, all of which lie from 10 to 200 miles

back from the shores of Lake Superior. Eight different railroads connect the mines with seven shipping ports, at which are located 20 mammoth wooden docks of a combined length of 27,788 feet and having a storage capacity of 656,716 tons. The shipments from these seven ports yearly, for the last five years, by lake and by rail, are given in the table following. In 1900 the rail shipments did not amount to half a million tons out of a total shipment of 19,059,393 tons.

Shipments of iron ore from Lake Superior ports, 1896–1900.

[From the Marine Review.]

Upper lake ports of shipment.	1896.	1897.	1898.	1899.	1900.
	Gross tons.	*Gross tons.*	*Gross tons.*	*Gross tons.*	*Gross tons.*
Escanaba	2,321,931	2,302,121	2,803,513	3,720,218	3,436,734
Marquette	1,564,813	1,945,519	2,245,965	2,733,596	2,661,861
Ashland	1,566,236	2,067,637	2,391,088	2,703,447	2,633,687
Two Harbors	1,813,992	2,651,465	2,693,246	3,973,733	4,007,294
Gladstone	220,887	341,014	335,955	581,457	418,854
Superior	167,245	531,825	550,403	878,942	1,522,899
Duluth	1,968,982	2,376,064	2,635,262	3,509,965	3,888,986
Total by lake	9,644,036	12,215,645	13,655,432	17.901,358	18,570,315
Total by rail	290,792	253,993	369,241	350,446	489,078
Total shipments	9,934,828	12,469,638	14,024,673	18,251,804	19,059,393

The rates of freight on iron ore in effect during the season of 1901 were as follows: From Escanaba, 60 cents per ton to the lower Lake Erie ports; from Marquette, 70 cents per ton, and from the head of the lakes (Duluth, Two Harbors, Superior), 80 cents per ton. These rates are subject to the usual addition of 5 cents per ton to ports east of Erie.

Ten ports on the lower shores of Lake Erie receive fully four-fifths of this ore tonnage. These are Toledo, Sandusky, Lorain, Cleveland, Fairport, Ashtabula, Conneaut, Erie, Buffalo, and Tonawanda. The combined receipts at the docks of these harbors in 1900 were 15,797,787 tons. From these points the ore is distributed to furnaces in Ohio and Pennsylvania principally, at the rate of about three-fourths of the season's receipts during the summer and one-fourth during the winter and spring. By the end of April the docks are cleared and ready for the next season's arrivals. Approximately 7,000,000 tons out of the 16,000,000 received annually go in equal portions to Cleveland and Ashtabula. Fully 2,250,000 tons are now received at Conneaut, while Lorain, Fairport, Erie, and Buffalo receive over 1,000,000 tons each per season.

The course of iron-ore rates during the two decades of the most rapid development for this traffic is given below.

Average freight rates on iron ore per gross ton from ports named to Ohio ports—Table covering wild and contract rates for twenty years past.

Years.	Escanaba.		Marquette.		Ashland and other ports on Lake Superior.	
	Wild.	Contract.	Wild.	Contract.	Wild.	Contract.
1881	$1.36	$1.75	$2.05	$2.45	.....	.....
1882	1.04	1.40	1.26	1.75	.....	.....
1883	1.22	1.00	1.40	1.20	.....	.....
1884	.87	1.10	1.08	1.35	.....	.....
1885	.78	.90	.98	1.05	$1.25	$1.15
1886	1.28	1.05	1.51	1.20	1.78	1.20
1887	1.59	1.40	1.87	1.63	2.23	2.00
1888	1.05	.90	1.30	1.15	1.43	1.25
1889	1.01	1.00	1.19	1.10	1.34	1.25
1890	.89	1.10	1.07	1.25	1.17	1.35
1891	.84	.65	1.02	.90	1.11	1.00
1892	.74	1.00	.98	1.15	1.15	1.25
1893	.56	.85	.71	1.00	.77	1.00
1894	.46	.60	.60	.80	.78	.80
1895	.73	.54	.92	.75	1.13	.80
1896	.52	.70	.66	.95	.77	1.05
1897	.45	.45	.55	.65	.57	.70
1898	.51	.45	.60	.60	.62	.60
1899	.95	.50	1.08½	.60	1.29½	.60
1900	.69½	1.00	.78	1.10	.84½	[1]1.25
Average twenty years	.87½	.91½	1.08	1.13	[2].90	[2].90½

[1] For trimming and unloading the average charge in 1900 was 25 cents per ton.
[2] For ten years.

Wild rates are those which prevail from time to time during the season among vesselmen, who, for the time being, find the carrying of ore more profitable than that of other traffic. The contract rate is that agreed upon beforehand for the season. The wild rate is usually lower, though not infrequently higher, than the contract rate.

THE LAKE COAL TRADE.

The Northwest has thus far proved to be singularly wanting in coal beds and mineral-fuel supplies within easy reach of the ore supplies. This has been probably the main reason why the iron and steel industry has not made more progress at the head of the lakes near the rich ore beds. The coal supply for this entire section comes mainly from the mines of Pennsylvania, West Virginia, Ohio, Indiana, Kentucky, and Illinois. The quantity of coal which such consuming and distributing centers as Chicago, Milwaukee, Duluth, and Superior take by lake depends much on the extent to which the railroads succeed in meeting the requirements especially of the first two of these markets.

The anthracite requirement of the Northwest is distributed, principally through Buffalo, to fewer than forty different ports. Buffalo has preserved a continuous record of the coal shipments for twenty-eight years. This record may be taken as an index to the entire

anthracite trade by lake, especially since the hard-coal shipments from Buffalo, at a rough approximation, constitute fully nine-tenths of the entire lake movement of anthracite coal. These shipments are shown in the accompanying table, prepared by the Buffalo Merchants' Exchange under the auspices and with the cooperation of the coal shippers.

Hard-coal shipments from Buffalo.

Years.	Net tons.	Years.	Net tons.	Years.	Net tons.	Years.	Net tons.
1873	570,440	1880	589,670	1887	1,904,060	1894	3,485,255
1874	384,500	1881	825,240	1888	2,556,270	1895	2,688,076
1875	439,730	1882	1,027,500	1889	2,156,670	1896	2,242,326
1876	361,480	1883	1,467,778	1890	2,044,134	1897	2,688,076
1877	455,070	1884	1,305,410	1891	2,365,895	1898	2,331,199
1878	331,170	1885	1,506,000	1892	2,852,330	1899	2,808,898
1879	580,640	1886	1,562,060	1893	2,703,673	1900	1,937,811

Somewhat more than 9,000,000 tons of coal, including both anthracite and bituminous, go to the Lake Erie ports for shipment to other destinations by water. The extent to which the various ports participate in the annual trade is indicated in the following table. Buffalo handles almost exclusively hard coal. Erie handles both hard and soft coal, while the other ports receive and ship mostly the bituminous variety. The figures are also from the records of the Buffalo Merchants' Exchange for Buffalo; for the other ports they are derived from the reports of the Ohio State mine inspector.

Coal shipments from Lake Erie ports.

[From the Marine Review.]

Ports.	1897.	1898.	1899.	1900.
	Tons.	*Tons.*	*Tons.*	*Tons.*
Buffalo	2,334,329	2,683,946	2,810,565	1,972,341
Erie	736,008	920,221	1,317,219	1,009,992
Conneaut	185,048	169,131	217,191	351,015
Ashtabula	992,970	1,061,057	957,357	1,657,208
Fairport	213,970	306,468	242,905	271,720
Cleveland	1,943,934	2,049,360	1,701,508	2,201,828
Lorain	151,634	172,269	267,109	430,772
Huron	176,028	263,278	340,073	.....
Sandusky	318,451	694,976	653,120	482,437
Toledo	944,875	911,862	866,957	1,035,563
Total	7,997,248	9,262,568	9,374,004	9,462,876

The lake rate on coal is affected by two conditions, of which account must be taken to explain the peculiarities of this trade. The first factor is the increasing share of the railroads in supplying Western demands. As is seen from the table of Chicago receipts,[1] more than half of the coal received at Chicago in 1900 came from the West by rail. Nearly half of the anthracite receipts came by rail during the first eight months of 1901. The reasons for an increasing supply by rail are

[1] From the Anthracite Coal Operators' Association Letter, New York.

the roundabout lake route, the difficulty of rehandling coal economically at ports, and the shortness of the lake season of navigation. Much progress has, however, recently been made in the mechanical handling of coal, both in loading and unloading.

Comparative receipts of coal at Chicago.

Sources of supply.	August—		Eight months ending August—	
	1900.	1901.	1900.	1901.
	Tons.	*Tons.*	*Tons.*	*Tons.*
Anthracite by lake	159,989	119,053	631,742	414,818
Anthracite by rail	66,138	78,151	431,862	394,454
Stock on hand January 1	.....	.....	424,432	199,416
Total	226,127	197,204	1,488,036	1,009,088
Total Western coal	323,988	297,016	3,306,089	3,019,776
Total all sources, including coke	678,799	672,483	6,230,816	5,536,486

The other factor affecting west-bound rates on coal by lake is the peculiar degree of competition among carriers for coal tonnage. East-bound freight is several times larger than west bound, the former consisting chiefly of ore and the latter of coal. The ore freighters have contracts to run through the entire season between upper-lake and lower-lake ports. If they took coal, on their return westward, to the leading ports of Chicago or Milwaukee, they would have to go out of their way to reach these points and either take grain east again or go north empty from Lake Michigan for ore. There is not enough coal to supply cargoes to all boats returning to Lake Superior points, hence the rates barely cover the cost of delay in loading and unloading. To Lake Michigan points, on the other hand, a good price has to be paid to get boats to go to the southern end. Grain out of Chicago can not pay as high a rate as from Duluth, owing to railroad competition. The schedule of average rates on hard and soft coal is given herewith for ten years.

Average daily rates on soft and hard coal from Ohio ports to Lake Superior and Lake Michigan ports, in cents per net ton.

Years.	Soft coal.					Hard coal.	
	Milwaukee.	Escanaba.	Duluth.	Green Bay.	Manitowoc.	Chicago.	Duluth.
1891	61	52	49	.....	.....	56	29
1892	58	43	43	55	49	59	43
1893	48	40	38	50	41	49	29
1894	48½	39	37½	49½	48	46	25
1895	54	39	36½	50	51	59	24
1896	33½	27	29½	32½	32	36	24
1897	28½	29½	26	30	31	29	26
1898	28	26½	23	28½	28½	28	23
1899	69	58	45½	66½	67	73	49½
1900	45	40	40	45	43½	48	39½
Average for 10 years	47	39	37	45	43	48	31

THE LAKE LUMBER TRADE.

Lumber is more general in the scope of its distribution than any other staple article of lake trade. The lumber regions on the Michigan peninsulas, together with those regions which lie west of the lakes, have contributed vast quantities of this commodity for the last thirty years to the markets on every portion of these waters. Tonawanda and Buffalo have generally received the bulk of deliveries for distribution southward and eastward by rail and canal. For the season of 1900, 31 lake ports received 1,417,028,000 board-measure feet and shipped 905,690,000 board-measure feet. These figures are probably underestimates.

Nevertheless these statistics show that among receiving markets there are three which stand out prominently—Chicago, Cleveland, and Buffalo. If we include South Chicago receipts with those of Chicago, these three ports take 65 per cent of the total lake receipts. By including Tonawanda there are four ports which together took 1,047,000,000 feet for the season of 1900, equal to 73 per cent of the total receipts.[1]

All of these cities are distributing centers of corresponding magnitude, but their distributive movements of lumber are largely rail movements. The Buffalo rail shipments in 1899 in round numbers amounted to 314,000,000 feet, and the lake shipments for 1900 were only a little more than 2,000,000 feet. Chicago shipments by rail in 1899 amounted to 737,000,000 feet out of receipts aggregating 1,693,000,000 feet, while the lake shipments for 1900, to September 30, were slightly more than 18,000,000. So in the case of other lake receiving ports, the shipments by water are a comparatively small proportion of their receipts. The main connections of these distributing centers (except Chicago) with the lumber regions are by lake, but their connections with consuming regions are by rail throughout the territory commercially tributary. Tonawanda, however, distributes largely by canal throughout northern and eastern New York. At Chicago of 1,672,581,000 feet received in 1899, 793,788,000 feet came by lake, and 878,793,000 feet by rail. Of 350,121,000 shingles received, 107,817,000 came by lake and 242,304,000 by rail.

Outside of the Lake Michigan receipts by water, the lumber movement is primarily eastward traffic, by way of the St. Marys Falls Canal. The general development of this feature of the business is indicated by the amount, values, and rates of freight as presented in the appended table:

[1] Lumber trade of the United States, Treasury Bureau of Statistics, November, 1900, p. 1143.

East-bound lumber movement via St. Marys Falls Canal for fourteen years.[1]

Year.	Amount.	Estimated value.	Freight by lake per 1,000 feet B. M.	Year.	Amount.	Estimated value.	Freight by lake per 1,000 feet B. M.
	Feet B. M.				*Feet B. M.*		
1887	165,226,000	$2,974,068	$4.00	1894	722,788,000	$11,564,608	$1.90
1888	240,372,000	4,326,696	2.80	1895	740,700,000	8,888,400	2.00
1889	315,564,000	5,679,972	2.70	1896	684,986,000	8,562,325	1.80
1890	361,929,000	6,514,722	2.38	1897	805,612,000	10,875,762	1.55
1891	366,305,000	6,593,490	2.70	1898	895,485,000	12,984,562	1.65
1892	512,844,000	9,231,192	2.95	1899	1,038,057,000	17,646,969	2.30
1893	588,545,000	10,593,810	2.35	1900	909,651,000	15,009,241	.....

[1] Annual Reports of United States Engineer in charge of St. Marys Falls Canal.

LAKE AND RAIL FREIGHT CHARGES COMPARED.

From the table below it will be seen that the charge for moving through freight per ton per mile on the lakes is about one-fourth of the charge for the same service on the two trunk-line railroads with which comparison is made.

Tons of freight moved 1 mile and cost per ton-mile on two leading trunk line railroads and in vessels passing through the St. Marys Falls canals.[1]

Year.	In vessels passing through Soo Canal.	Cost per ton per mile.	On New York, Chicago and St. Louis Rwy. (Nickel Plate).	Cost per ton per mile.	On Lake Shore and Michigan Southern Rwy.	Cost per ton per mile.
	Tons moved 1 mile.	*Mills.*	*Tons moved 1 mile.*	*Mills.*	*Tons moved 1 mile.*	*Mills.*
1891	7,292,462,269	1.35	1,052,515,236	4.35	2,168,727,231	4.56
1892	9,222,773,938	1.31	1,107,342,842	4.34	2,435,079,712	4.36
1893	8,980,310,240	1.10	946,792,616	4.78	2,427,692,020	4.61
1894	10,927,871,324	.99	896,657,971	4.31	2,196,244,568	4.06
1895[2]	12,505,548,892	1.14	1,024,736,918	4.09	2,475,757,176	4.10
1896[2]	13,582,641,886	.99	890,772,263	4.25	2,377,034,118	3.81
1897[2]	15,969,393,576	.83	904,102,727	4.20	2,473,436,580	3.56
1898[2]	17,891,597,030	.79	1,046,143,799	4.15	2,771,978,098	3.29
1899[2]	20,891,944,628	1.05	1,220,486,233	3.76	3,414,880,381	3.20
1900[2]	21,179,229,014	1.18	1,210,172,317	3.91	3,620,829,452	3.29
Averages	13,844,377,280	1.07	1,029,972,292	4.19	2,636,165,933	3.88

[1] From the Blue Book of American Shipping, p. 265 (1901).
[2] American and Canadian canals.

It must be noted in making this comparison that the lake traffic through the canals at St. Marys Falls is through traffic, as a rule, while the rail traffic with which the lake movement is compared is both through and local, the cost of handling local traffic being the greater. Even at this low average rate there can be no doubt as to the high degree of profitableness of investments in lake shipping. Freight tonnage has increased more rapidly than carrying capacity, and for several years the shipyards have apparently been working to their full capacity. The rate situation under these conditions has been such as to put shipowners in a more or less independent position. Consequently rates have remained firm, with a tendency to rise, toward the close of the season.

PROGRESS OF SHIPBUILDING ON THE LAKES.

The maritime equipment of these inland seas is remarkable for the progress in shipbuilding, both of wood and of steel. Ever since 1890 the lake tonnage has aggregated more than 1,000,000 tons. The aggregate tonnage on the lakes at the close of the fiscal year, June 30, 1900, was 1,565,585 tons, or an increase of 50 per cent in ten years. During 1900, out of 61 vessels built at the twenty or more shipyards on the lakes, only 6 were of materials other than steel. Thirty-two of these vessels, with an aggregate tonnage of 87,050 gross tons, were constructed in the consolidated shipyards of the American Shipbuilding Company. Thirteen yards not in the consolidation had under way 25 vessels, of 32,350 gross tons. It is said that most of the new vessels were for private firms and individuals.

Below is a table of yearly construction, showing the tonnage of all kinds built in the United States during ten years, divided into three classes of lake, seaboard, and river construction, for comparison:

Tonnage of vessels built in the United States, 1891–1900.

[From report of Commissioner of Navigation.]

Fiscal year ending June 30—	On the Great Lakes.	On the entire seaboard, including New England coast.	On the Mississippi River and its tributaries.	Total.
1891	111,856	237,462	19,984	369,302
1892	45,969	138,863	14,801	199,633
1893	99,271	102,830	9,538	211,639
1894	41,985	80,099	9,111	131,195
1895	36,353	67,127	8,122	111,602
1896	108,782	102,544	15,771	227,097
1897	116,937	103,504	11,792	232,233
1898	54,084	112,879	13,495	180,158
1899	80,366	196,120	23,552	300,038
1900	130,611	249,006	14,173	393,790

From this table it is evident that in 1896 and 1897 the newly built tonnage on the lakes actually exceeded that of the entire seaboard, and fell little short of the year's output for all the rest of the country.

As to materials of construction, the iron and steel tonnage in the lake trade amounts to 43 per cent of the total iron and steel tonnage of the United States, including Hawaii. In the development of original types of vessels, in the progress of standardizing parts, and in the use of labor-saving machinery and tools, the shipyards of the interior are among the best equipped in the world.

The substitution of steam for sail propulsion affected lake traffic rather slowly. In 1868 there were on the great lakes 264 steam vessels, with a measurement of 144,117 gross tons, and 1,855 sailing vessels, with a measurement of 293,978 gross tons. The relative importance of these two classes of vessels changed very slowly during the next fifteen

years. It was not until 1884 that the steam tonnage exceeded the sail tonnage. Since that year sailing tonnage has remained about stationary, being 307,733 gross tons in 1884 and 334,104 gross tons in 1897, while the steam tonnage amounted in 1897 to 977,235 gross tons. In 1900 the sailing tonnage amounted to 334,563 gross tons as against 1,107,723 gross tons of steam vessels. The total tonnage of sail, steam, and tow in 1900 was 1,561,691 gross tons, or 32.2 per cent of the whole tonnage of the United States. This is inclusive of vessels engaged in the foreign trade with Canada.

MECHANICAL METHODS OF HANDLING FREIGHT.

The application of machinery to freight handling is one of the marvels of lake transportation. Vessels are loaded and unloaded in as many hours now as days only a few years ago. Vessels have been built with as few decks as practicable and with uniform distances between hatchways. To conform to this standard the ore and grain docks on the upper lakes and the coal docks on the lower lakes have their spouts constructed so as to shoot the cargo into every one of the hatches at the same time. By means of endless chains of buckets the grain ships are rapidly unloaded into elevators at the lower ports. The mammoth cantilever hoisting machines at Conneaut and Cleveland lift a ton or more of ore in each bucket or scoop, from vessels into cars of 50 tons capacity. Approved types of hoisting and conveying apparatus, which have been in use for several years, are employed almost universally on a large proportion of the thirty-five leading docks on Lake Erie. This class of appliances is utilized in handling both coal and iron ore, the raw material being conveyed to or from the vessels in iron buckets capable of holding from 1 to 1½ tons. Revolving derricks are also used to some extent, and there are in service at ten ports on Lake Erie a total of 17 car-dumping machines engaged in the transfer of coal, a carload at a time, from railroad cars to boats.

CONSOLIDATIONS IN LAKE SHIPPING.

Here, as elsewhere, the agencies of commerce have passed quite largely under consolidated control. The shipping business is still too profitable to exclude individual enterprise in the ownership and operation of tonnage, but the tendency has been toward a more complete control of the freight rates by the large companies which have been formed within a few years by the purchase of the fleets of smaller organizations and of individuals. Particularly is this the case with towing. This branch of shipping is so comprehensively and exclusively in command of one company as to give it control of all the harbor

towage on the lakes. In the ore-carrying trade there was in 1900 one fleet of 27 steel steamers and barges, capable of delivering 4,500,000 tons of ore from the Lake Superior shores to the lower lake docks in a season of seven months. Another similar company, with an ore-freighting capacity of 1,400,000 tons per season, has been operating for a year or two. At first it competed and lowered rates, but after a few months it maintained them at a higher figure than had been the case for several years. The competition of the "Carnegie" and the "Rockefeller" fleets, by which for several months in 1900 the latter kept out of service and tied up to the docks the entire fleet, in order to keep up the level of the contract rate of $1.25 per ton on ore, was a strategic move to force a truce which has since become the rate basis of the ore-carrying business.

Outside of ore carrying and towing, consolidations have not made so much progress. Other lines of lake traffic are in a position quite different in this respect. The progress of consolidation in the coal trade, however, has been such that in many respects it has to be considered as in much the same state as the iron and the steel interests. The anthracite companies distribute their coal to the Northwest very largely on their own account, though by no means to such an exclusive extent as the ore-carrying fleets. There is large latitude for enterprise to engage in shipping wholly independent of railroads or of the iron and steel companies which handle their own ore.

RECOMMENDATIONS OF THE COMMISSION.

To the end that discrimination and inequality as between shippers, and maladjustment of freight rates between competing markets and trade centers, may be abolished or minimized; that the public may be assured of reasonable and stable freight rates, which will at the same time afford fair returns upon capital investment; that the interest of investors in American railroad securities may be protected; and that undue inflation of capitalization, and fraudulent or speculative manipulation of business by directors or other interests in control, may be prevented, we recommend—

1. That the policy of governmental supervision and control of railroads, as originally laid down in the Senate committee report of 1886, and embodied the following year in the interstate-commerce act, be revived and strengthened; that the authority of the Interstate Commerce Commission, necessary for the adequate protection of shippers and clearly intended by the framers of the law, be restored, and that the powers and functions of the commission be enlarged practically as contemplated in the so-called Cullom bill of 1900, except as to authority to prepare and enforce a uniform classification.

Specifically, but regardless of legal phraseology, such legislation should provide—

(*a*) For more stringent regulation of the conditions under which freight and passenger tariffs are published and filed, in order to secure greater publicity both in respect to established rates and contemplated changes.

No rate or classification ought to be changed without at least sixty days' notice to shippers, unless specifically authorized by the Interstate Commerce Commission. All charges, privileges, or facilities, such as storage or free delivery, and all pertinent rules or regulations affecting transportation, ought to be fully and plainly stated.

(*b*) That strict adherence to published tariffs be required and rebates or discrimination prevented by an increase of the penalties therefor.

These penalties should lie not only against the person who gives but also against the one who accepts discrimination in any form whatsoever. Corporations should be made liable the same as individuals. The penalty against the carrier for any departure from the published tariff, or for neglect or refusal to obey any final administrative order of the commission, should be a heavy fine ($5,000 or more) and cumulative for each offense. Provisions for imprisonment in the present law should be repealed. Penalties for testifying falsely should be prescribed, as for perjury in the Revised Statutes of the United States.

(*c*) That the long-and-short-haul clause, in section 4 of the act of 1887, be strengthened and rigidly enforced, unless the carriers shall be released by special order of the Interstate Commerce Commission in view of dissimilar conditions, as provided by the act, the commission at the same time prescribing the extent to which any departure therefrom shall prevail.

This reverses the present practice, which permits the carriers to decide for themselves when and to what extent conditions are dissimilar.

(*d*) For the definite grant of power to the Interstate Commerce Commission, never on its own initiative, but only on formal complaint, to pass upon the reasonableness of freight and passenger rates or charges; also the definite grant of power to declare given rates unreasonable, as at present, together with power to prescribe reasonable rates in substitution.

(*e*) For early hearings upon complaints and for prompt decisions by the commission, the purpose being to obviate intolerable delays.

Thirty days should be the limit of time for appeal to the circuit court. Appeal from an administrative order of the commission should not vacate or suspend an order unless it plainly appears that such order proceeds upon some error of law or is unjust or unreasonable on the facts, in which case, and not otherwise, the court may suspend its operation during the pendency of proceedings in review. All findings

of fact by the commission, when properly certified, should be received as prima facie evidence in subsequent proceedings in the case; such certification should be furnished within twenty days. New testimony offered by either party, when it appears that such testimony is material and could not have been taken in the first instance, should be taken by the Interstate Commerce Commission on order from the court. The time in which an appeal to the Supreme Court of the United States may be taken should be limited to thirty days, but such appeal should not vacate or suspend the order appealed from.

(*f*) For a specific grant of power to the Interstate Commerce Commission over classification, both as to items and grouping.

Coupled with this, however, we dissent from the section of the so-called Cullom bill requiring the Interstate Commerce Commission within a certain period to promulgate a uniform classification for the United States. This is not intended to detract from the importance or desirability of greater uniformity in classification, but action to this end should be taken by the carriers on their own initiative.

(*g*) For the establishment of a permanent corps of expert auditors who shall have authority, under the supervision of the Interstate Commerce Commission, to examine periodically the accounts of all railroad companies, whether operating or financial in their nature.

Provisions for securing publicity in respect of financial and operating facts should be made. Such examinations for detection of violations of law or for statistical returns should be subject to provisions safeguarding confidential information similar to those which now prevail in the case of the inspection of national banks.

(*h*) That violations of the act, respecting the keeping and filing of annual reports by carriers, should be made misdemeanors, and promptness in making such returns should be required.

2. That, to further the effectiveness of the commission, its membership should be directly representative of the various interests concerned, in the persons of shippers or business men, traffic experts (rail and water), and men of legal training, and the number of commissioners should be increased to seven.

3. That legislation analagous to the anti-stock-watering statutes of Massachusetts be enacted by the several States in order to prevent overcapitalization and to secure supervision over the promotion and financing of railroad organizations and consolidations; and that new railroad construction should be regulated so as to prevent unwise paralleling of existing lines.

4. That railroad companies be prohibited by law from making lower freight rates upon imports billed to the interior of this country, in connection with ocean transportation or otherwise, than are made on similar articles from the seaboard to the interior, or than are made from one inland point to another when the distance is not greater.

The recommendations of the Commission relating to labor employe in transportation will be found in this volume under the head o "Labor."

ALBERT CLARK, *Chairman.*
BOIES PENROSE.
*S. R. MALLORY.
THOMAS R. BARD.
†JOHN J. GARDNER.
JNO. C. BELL.
THEO. OTJEN.
WM. LORIMER.
ANDREW L. HARRIS.
JOHN M. FARQUHAR.
EUGENE D. CONGER.
THOS. W. PHILLIPS.
C. J. HARRIS.
J. L. KENNEDY.
CHAS. H. LITCHMAN.
D. A. TOMPKINS.

*By reason of a very protracted and serious illness I was unable t keep up with the inquiry by the Commission into any of the subject on which it entered, except that embraced under the heading "Trans portation." I therefore can not join in the Commission's recommenda tions on any subject except Transportation.

I concur in all the recommendations of the Commission on the subject of Transportation, with the following exceptions, viz:

In cases of discrimination, I think a penalty should be imposed only on the person who gives the discriminating rate, not because the receiver thereof is any less culpable, but because if he also is liable to prosecution, he can and will, under the law, refuse to testify, and in most cases such action on his part will make it impossible to procure any evidence against the person granting the discrimination.

For this reason I can not concur in the Commission's recommendation that "these penalties should lie not only against the person who gives but also against the one who accepts discrimination in any form whatsoever."

S. R. MALLORY.

†With a reservation as to the circumstances under which accounts may be inspected by public examiners, and to the extent to which appeal should suspend an order before final hearing.

JOHN J. GARDNER.

MANUFACTURES, TRADE, AND COMMERCE.

I. STATISTICAL SUMMARY OF PROGRESS.

INDUSTRIES GENERALLY.

The increase in the manufactures and commerce of the United States during the past half century has been enormous. It is characteristic of progress in civilization, with the usual greater aggregate productive power on the part of the people which accompanies it, that manufactures, transportation, and trade should increase in greater proportion than agriculture and mining. The amount of food and other raw material required increases, for the most part, but little more rapidly than the population. If the productive power of the people, therefore, increases by a much higher ratio, labor is set free from the task of producing the raw materials, the absolute necessities of life, and may devote itself to elaborating materials so that they shall supply higher needs and appeal to more developed tastes. The employments of the world thus become more and more diversified. Because of the wonderful improvements in means of production, the same amount of labor can accomplish vastly more than it could fifty or one hundred years ago. A great variety of new products and new services, unknown to the past generations, has been introduced, and the people generally are able to enjoy products formerly accessible to the few only; and the quality of goods, even those consumed by the poorer classes, has risen greatly.

FIGURES OF EARLIER CENSUSES.

The statistics of the occupations of the people of the United States show distinctly the growing importance of manufactures, trade, and transportation, as compared with agriculture, and even with mining. Unfortunately, these figures for the census of 1900 are not yet available. Moreover, the statistics of occupations prior to 1880 are not closely comparable with those of that census. A comparison between 1880 and 1890 shows that the proportion of the total population engaged in gainful occupations, employed in agriculture, fisheries, and mining,

decreased from 46.03 per cent in the former year to 39.65 per cent in the latter year. On the other hand, the proportion engaged in manufactures and mechanical industries increased from 19.63 per cent to 22.39 per cent, while those occupied in trade and transportation increased still more rapidly—from 10.73 per cent to 14.63 per cent of the entire working population. The increase of those engaged in mercantile business was almost as rapid as that of those in transportation. There is every reason to believe that the census of 1900 will show approximately the same increase over that of 1890 in the proportion of the population engaged in manufactures and commerce, as compared with those engaged in the extractive industries.

The following table from the census of 1890 shows the progress in manufacturing industries by decennial periods from 1850 to 1890. The figures actually cover for the most part the calendar year preceding that in which the census is taken:

Statistics of manufactures, with percentages of increase: 1850 to 1890.

[Census of 1890, Manufactures, Vol. 1, p. 4.]

Items.	1850.	1860.	Percentage of increase in the decade.	1870.	Percentage of increase in the decade.
Number of establishments reporting	123,025	140,433	14.15	252,148	79.55
Capital	$533,245,351	$1,009,855,715	89.38	$1,694,567,015	67.80
Average number of employees (aggregate)	957,059	1,311,246	37.01	2,053,996	56.64
Total wages	$236,755,464	$378,878,966	60.03	$620,467,474	63.76
Cost of materials used	$555,123,822	$1,031,605,092	85.83	$1,990,741,794	92.98
Value of products	$1,019,106,616	$1,885,861,676	85.05	$3,385,860,354	79.54

Items.	1880.	Percentage of increase in the decade.	1890.	Percentage of increase in the decade.
Number of establishments reporting	253,502	0.54	322,638	27.27
Capital	$2,780,766,895	64.10	$6,139,397,785	120.78
Average number of employees (aggregate)	2,700,732	31.49	[1]4,476,884	65.77
Total wages	$939,462,252	51.41	[1]$2,171,750,183	131.17
Cost of materials used	$3,395,925,128	70.59	$5,021,453,326	47.87
Value of products	$5,349,191,458	57.99	$9,056,764,996	69.31

[1] Includes 461,009 officers, firms, and clerks, and their wages, amounting to $381,988,208. These classes of employees were not reported separately in prior censuses, and were in fact for the most part not reported at all. The census authorities further express the opinion that changes in the form of inquiry probably tended to swell this figure abnormally in 1890.

In considering these figures it is to be remembered that the compilation of manufacturing statistics was much less satisfactory and complete in the censuses prior to 1890 than it has been since, and that the enormous increase shown between 1880 and 1890 is in some measure due to the greater accuracy of the investigation in the latter year. This, however, by no means wholly vitiates the comparison.

From the above table it will be seen that the number of manufacturing establishments has increased very much less rapidly than the other items, showing, as might be expected, that there has been a

great increase in the average size of establishments. The amount of capital employed in a given industry is peculiarly difficult to estimate, especially for the reason that the ownership of the capital actually making up a complete plant may rest in several hands; thus, the building in which a manufacture is carried on may be owned by some other person than the owner of the industry. Though no great accuracy can therefore be attributed to the above figures, they indicate with sufficient clearness the leaps and bounds by which the amount of capital invested in the manufacturing industry has increased. In each decade since 1850 the increase has been from 64 per cent to 120 per cent, though the apparent increase from 1880 to 1890 is greater than the real one, on account of the change in the method of securing the statistics. The capital invested in manufactures appears no less than six times as great in 1890 as in 1860.

The average number of employees presents a somewhat lower rate of increase than the capital invested or than the value of the product, showing, as might be anticipated, that each workingman, by the aid of improved machinery and methods, is able steadily to increase his output. Eliminating a considerable proportion of the officers and clerks who were counted in the census of 1890, but not in earlier censuses, we should find the rate of increase in number of employees by decennial periods ranging from about 30 per cent to 56 per cent. The statistics of wages are discussed more fully in connection with the subject of Labor. Despite their inevitable inaccuracy, they show clearly that the total payment for wages had, up to 1890, constantly increased with greater rapidity than the number of employees, so that advance in the rate of wages is indicated for each census period. The figure for 1890, however, as indicated in the footnote to the table, is somewhat misleading.

Statistics of the total value of manufactured product involve of necessity many duplications. The total value of manufactured products includes that of the raw materials. The raw material of one establishment is often the partly manufactured output of another manufacturing plant. The figure for the total value of manufactures at any census, therefore, is very much greater than the net value. Prior to 1890 no attempt was made to distinguish between those raw materials of manufacture which are partly manufactured and those which are the direct products of agriculture and mining. In other words, there was no attempt to eliminate the duplication of manufactures. This elimination is being attempted in the census of 1900, and statistics for certain States show that probably the net value of manufactures will be reduced in this way to not more than two-thirds the total value. In a certain sense the actual significance of manufacturing industry may be judged yet more satisfactorily by subtracting the value of all raw materials from that of finished products,

leaving the amount added to the value by the processes of manufacture. On the whole, it is probable that the census figures, from decade to decade, for the total values of manufactured products and for the excess of those total values above the cost of raw material, present fairly correctly the progress of industry.

It will be observed from the above table that the decennial rate of increase in the gross value of manufactured products since 1850 has ranged from 58 to 85 per cent. The increase since 1870 has been somewhat less rapid than before. The output of manufactured articles by the census of 1890 was reported at $9,056,764,996, an increase of 69 per cent above the figure of 1880 and fully nine times more than the value as stated in 1860. In the decades from 1860 to 1870 and 1870 to 1880 the increase in the cost of materials used was considerably more rapid than that in the value of finished product, so that the net value added by manufacture would increase less rapidly than the value of finished product. On the other hand, the cost of materials, as reported by the census of 1890, had increased much less rapidly over 1880 than the value of the total product, showing a considerably greater rate of increase in the value added by manufacture. The duplications in the total value of products, because of the use of manufactured products as raw material, appear in the cost of materials, so that the difference between the two figures shows with approximate correctness the actual addition to the value of products by manufacture. In 1890 this addition amounted to a trifle over four billions of dollars.

COMPARISON OF LEADING INDUSTRIES, 1880 AND 1890.

The following table indicates the relative importance of the great manufacturing industries of the United States, by the censuses of 1880 and 1890. In general, it may be assumed that approximately the same relative standing as shown by the census of 1890 has been maintained by the different industries during the decade since; although doubtless the increase in the production of iron and steel, of foundry and machine-shop products, in shipbuilding, and in a few other industries, will be greater than that for the average of all industries. The table shows the value of the product of each industry whose output in 1890 exceeded $40,000,000, omitting, however, the building and other mechanical trades as distinguished from manufacturing industries.

Value of products of leading manufacturing industries, 1880 and 1890.

Mechanical and manufacturing industries.	Value of products, including receipts from custom work and repairing.	
	1880.	1890.
Agricultural implements	$68,640,486	$81,271,651
Boots and shoes, factory product	166,050,354	220,649,358
Brick and tile	32,833,587	67,770,696
Carpets and rugs, other than rag	31,792,808	47,770,193
Carriages and wagons, including custom work and repairing	64,961,617	114,551,907
Cars, railroad, street, and repairs, not including establishments operated by steam-railroad companies	27,997,591	76,352,199
Chemicals	38,173,658	59,352,548
Clothing, men's	209,548,460	378,022,815
Coffee and spice, roasting and grinding	22,924,894	75,042,010
Confectionery	25,637,033	55,997,101
Cotton goods	210,950,383	267,961,724
Flouring and gristmill products	505,185,712	513,971,474
Foundry and machine-shop products	214,378,468	412,701,872
Fruits and vegetables, canning and preserving	17,599,576	40,095,450
Furniture, including cabinet making, repairing, and upholstering	75,196,795	118,760,974
Gas, illuminating and heating		56,987,290
Glass	21,154,571	41,051,204
Hosiery and knit goods	29,167,227	67,241,013
Iron and steel	296,557,685	430,954,348
Leather, tanned and curried	184,699,633	138,282,004
Liquors, distilled	41,063,663	104,197,869
Liquors, malt	101,058,385	182,731,622
Lumber and other mill products from logs or bolts	233,268,729	403,667,575
Lumber, planing-mill products, including sash, doors, and blinds	73,424,681	183,681,552
Paints	23,390,767	40,438,171
Paper	55,109,914	74,309,388
Petroleum, refining		85,001,198
Printing and publishing	90,789,341	275,452,515
Saddlery and harness	38,081,643	52,970,801
Shipbuilding	36,800,327	40,342,115
Slaughtering and meat packing, not including retail butchering	303,562,413	564,667,035
Soap and candles	26,552,627	43,600,285
Sugar and molasses, refining	155,484,915	123,118,259
Tobacco, chewing, smoking, and snuff	52,793,056	65,843,587
Tobacco, cigars and cigarettes	63,979,575	129,693,275
Woolen goods and worsted goods	194,156,663	212,772,629

It will be seen that in 1890 the most important manufacturing industry in the United States, judged from the total value of the product, was that of slaughtering and meat packing for wholesale purposes. The value of dressed meat, however, consists very largely in the value of the live animal, and the increase in value through slaughtering and packing is much less than that conferred on many other products through manufacture. The next most important manufacturing industry, in one sense, is the milling industry, whose products were valued at more than a half billion of dollars in 1890. A large share of the value of these products also is accounted for by the raw material. It is noteworthy that the value of mill products had increased but slightly in 1890, as compared with 1880, a fact chiefly due to the lower price of grain in the latter year, but also in part to the fact that the consumption of food products does not increase as rapidly as that of less necessary commodities.

Already in 1890 the iron and steel industry had begun to attain the proportions which make it to-day conspicuously our most important branch of manufacturing. The aggregate value of the products of iron and steel in their cruder forms—as distinguished from machine-

shop products, hardware, and other more elaborated manufactures—was $430,954,348 in 1890, representing an increase of nearly 50 per cent as compared with ten years previous. Still more striking was the increase in the value of the products of American foundries and machine shops, which nearly doubled in ten years, and which in 1890 was little less than the value of iron and steel products. The census of 1900 will beyond question show another enormous leap in the importance of this industry, in which the plants, the machinery, and the skill of the workingmen are superior in this country to those in any other.

The other most important manufacturing industries in 1890 were, in the order named, as follows: Lumber and lumber products, clothing, printing and publishing, cotton goods, boots and shoes, malt liquors, sugar and molasses, furniture, carriages and vehicles.

Aside from the industries whose rapid increase from 1880 to 1890 has been already specially referred to, the most striking growth in the value of products, as shown by the two censuses, was in the following articles: Brick and tile, carriages and wagons, railroad and street cars, confectionery, canning and preserving of fruits, glass, hosiery and knit goods, distilled liquors, lumber and its products, printing and publishing, cigars and cigarettes. In each of these classes the increase in the value of product in ten years was nearly or quite 100 per cent, and in some instances the output considerably more than doubled. The increase in the printing industry is especially striking, the value of the output in 1890 being reported as three times greater than in 1880, despite the tendency to reduce the price of books and periodicals. The receipts from this industry of course include advertising.

STATISTICS OF MANUFACTURES FOR 1900.

Through the courtesy of Messrs. S. N. D. North and W. M. Steuart, Chief Statistician and Chief of Division for Manufactures in the Twelfth Census, the Commission is enabled to present the more important figures for 1900 in advance of their official publication by the Census Office. These figures (which are of a preliminary character and subject to revision) are compared with the corresponding figures for 1890 in the following table:

Statistics of manufactures according to the censuses of 1890 and 1900.[1]

Items.	1900.	1890.	Per cent increase.
Number of establishments	512,585	355,415	44.2
Capital	$9,853,630,789	$6,525,156,486	51.0
Wage-earners, average number	5,310,598	4,251,613	24.9
Total wages	$2,323,407,257	$1,891,228,321	22.9
Miscellaneous expenses	$1,028,550,658	$631,225,035	62.9
Cost of materials used	$7,849,916,080	$5,162,044,076	42.4
Value of products, including custom work and repairing	$13,019,251,614	$9,372,437,283	38.9
Value due to manufacture	$5,669,335,564	$4,219,393,207	34.7

[1] These figures do not include Hawaii or other insular possessions, establishments with a product of less than $500, governmental establishments, or penal, eleemosynary, and educational institutions which were not reported at the Eleventh Census.

In considering these figures it is to be remembered that most if not all of the reports of manufactures apply to the calendar year preceding the census year, that is 1889 and 1899, though some manufacturing establishments have fiscal years ending at different dates, and the census may include in some cases figures for part of the census year itself. The year 1899 was one of exceedingly high prosperity in the United States, but it was comparatively a short time after the great depression of 1893–1897, and industries had not yet reached quite such a high development as in 1900 and 1901. It is probable that a comparison between the calendar year 1890 and the calendar year 1900 would have shown still more rapid progress than is indicated by the comparison of 1889 and 1899. Both of the years actually covered by the figures of the respective censuses, however, are to be considered years of high prosperity. It is quite possible that, in several States, it would be found that the production of manufactures was less in quantity, and especially in value, during some of the years of depression than during 1889, and the rapidity of the recent increase in the amount and value of product up to the figures of 1899 is accordingly the greater.

From this table it will be seen that the number of manufacturing establishments has increased very greatly in ten years—44.2 per cent. While in many industries there is a tendency toward centralization, which decreases the number of establishments, there are many small hand industries still remaining, especially in the States least advanced in manufactures, and the increase in them, while not increasing the aggregate product of manufacturing industry very materially, may greatly increase the number of establishments. The increase in the capital invested in manufactures during the decade was from $6,525,156,486 to $9,853,630,789, or 51 per cent. This increase appears much less than that for industries as a whole from 1880 to 1890, but the figure for 1880 was undoubtedly understated, and the rate of increase in that decade accordingly unduly high.

It is probable that the general level of prices in 1899, the year actually covered by the last census, was somewhat lower than in 1889, so that the increase in total value of output must be attributed to larger quantity or superior quality. The above table shows that the increase in the value of the product of manufactures during the ten years between the two census periods was 38.9 per cent, a considerably lower rate of increase than that shown from 1880 to 1890 for the country as a whole, but still very creditable in view of the severity and length of the depression during the past decade. The cost of raw materials in 1900 was a little less than five-ninths of the entire value of the product. The cost of materials appears to have advanced somewhat more than the value of the finished product—42.4 per cent in ten years. It follows that the value due to manufacture has increased less rapidly than the value of the product, the increase being 34.65 per cent.

The number of wage-earners, according to the two censuses, is not strictly comparable. At the census of 1890 employers were asked to state the average number of persons employed during the entire year, and the average number was computed for the actual time the establishments were reported as being in operation. In 1900 the average number employed during each month of the year was ascertained as a basis. It is impossible to know what effect this change in the accuracy of the reports would have upon the number. Moreover, in 1890, overseers, foremen, and superintendents of subordinate rank receiving salaries were included among wage-earners, while by the census of 1900 the wage-earning class is strictly distinguished from the salaried employees. If the same basis had been adopted in 1890, the number of wage-earners would have been somewhat smaller, and the percentage of increase in 1900 would appear somewhat larger. The difference in the number of wage-earners through this change is not great, but since most of the employees of the class referred to receive higher compensation than ordinary wage-earners, the figure of wages paid for 1890 is probably overstated a small per cent. General superintendents and managers were reported distinctly in 1890 as well as in 1900.

Taking the figures as they stand, the increase in the number of wage-earners from 1890 to 1900 appears as 24.9 per cent, and in the total amount paid for wages as 22.9 per cent. This indicates some decrease in the rate of wages, though a slight one. It is probable in any case that the years 1900 and 1901 would show a very considerable increase in the rate of wages above those for 1899, the year actually covered by the last census. Wages were reduced in many industries during the prolonged depression of 1893–1897, and, as ordinarily happens, prices and profits rose sooner after the depression than wages.

PROGRESS OF CERTAIN INDUSTRIES BY CENSUS OF 1900.

The census statistics of 1900 have been issued for only a few of the many industries of the country. The figures as yet available are preliminary and subject to revision, but are approximately correct. The following table presents the statistics for these trades, together with a comparison with the figures of 1890:

Statistics of certain industries, 1890 and 1900.

Industries.	Number of establishments.		Capital.		Cost of materials.	
	1900.	1890.	1900.	1890.	1900.	1890.
Glass	355	294	$61,423,903	$40,966,850	$16,731,009	$12,140,985
Clay and pottery products, brick, and tile	6,422	6,535	147,913,323	108,705,670	22,903,184	18,257,998
Leather—tanned, curried, and finished	1,306	1,596	173,977,421	81,261,696	155,608,004	100,114,806
Shipbuilding	1,083	1,010	76,699,651	58,393,074	33,031,280	16,925,109
Silk	483	472	81,082,201	51,007,587	62,406,665	51,004,425
Beet sugar	31	.....	20,958,519	.....	4,803,796	.....
Refining of petroleum	67	94	95,327,892	77,416,296	102,859,341	67,918,723
Paper and pulp	763	649	167,507,713	89,829,548	70,530,236	44,228,480
Coke	241	218	36,502,679	17,462,729	19,665,582	11,509,737
Cotton goods	1,051	905	467,240,157	354,020,843	176,551,527	154,912,979
Cotton-seed products	357	.....	.....	.....	28,632,616	.....
Lumber and timber products	33,035	22,617	611,010,412	557,881,064	317,607,048	242,562,296
Turpentine, rosin, and tar	1,508	670	11,847,495	4,062,375	6,186,492	2,874,698
Gas	877	742	567,000,506	258,771,796	20,605,356	14,037,087

Industries.	Value due to manufacture.		Value of product.	
	1900.	1890.	1900.	1890.
Glass	$39,808,708	$28,910,019	$56,589,712	$41,051,004
Clay and pottery products, brick, and tile	72,540,678	71,569,781	95,443,862	89,827,785
Leather—tanned, curried, and finished	48,435,123	38,167,198	204,038,127	138,282,004
Shipbuilding	40,413,473	23,417,006	73,444,753	40,342,115
Silk	44,849,593	36,294,029	107,256,258	87,298,454
Beet sugar	2,522,061	.....	7,323,857	.....
Refining of petroleum	21,070,043	17,082,475	123,929,384	85,001,198
Paper and pulp	56,755,926	34,708,704	127,286,162	78,937,184
Coke	15,919,913	4,988,608	35,585,445	16,498,345
Cotton goods	160,423,355	118,068,745	336,974,882	267,981,724
Cotton-seed products	13,779,219	.....	42,411,835	.....
Lumber and timber products	249,225,986	195,395,086	566,832,984	437,957,382
Turpentine, rosin, and tar	14,158,396	5,202,686	20,344,888	8,077,379
Gas	55,111,337	42,950,208	75,716,693	56,987,290

The comments already made regarding the significance of the census data must be borne in mind in considering these figures.

In most of the industries named the increase in the number of establishments from 1889 to 1899 (the years actually covered by the censuses) was very much less than the increase in the capital and in the value of the product. In two of the industries the number of establishments actually decreased. This shows the same tendency toward increase in the size of establishments as was manifested by earlier censuses. It is noteworthy that in several of the industries named the increase in capitalization during the past decade has been more rapid than the increase in the value of the product. In the gas and leather industries particularly the amount of capital is, in each case, reported

more than twice as great in 1900 as in 1890, although the aggregate value of the product had increased only about 50 per cent. The capital invested in the paper and pulp industry increased almost 100 per cent in the decade, although the value of the product was increased only about 60 per cent. It is doubtless true, in the case of these and some of the other industries, that great improvements in plants have been made in the last few years, in anticipation of still larger expansion of business, or because of changes in manufacturing processes.

The increase in the value of the completed product is probably the most satisfactory measure of the increase in the production and prosperity of the manufacturing industries. The value of the product will, of course, depend upon its amount and also upon prices. Statistics elsewhere presented show that the general level of prices in 1899 was a little lower than in 1889, and the increase in the value of the products in 1899 must be attributed chiefly to their increased quantity.

The glass industry doubled its output in the decade from 1880 to 1890. For the last ten years the increase reported is much less, though still more than 35 per cent. The great increase in the earlier period was doubtless due to the newness of the industry at that time.

The industries working in clay, which include the manufacture of brick and tile, and of pottery, show much less advance in the value of product from 1890 to 1900 than most of the other industries covered by the table. The amount of capital invested increased very considerably, but the value of the product increased barely 6 per cent, and the increase in the value due to manufacture only about 1 per cent. In this industry, however, the figures presented by the Geological Survey show an extremely rapid increase in production during 1899 and 1900 as compared especially with 1896 and 1897. The value of the total output in 1897 was only $62,359,991, while in 1900 it was $96,212,345.

The leather industry was almost the only important one the value of whose product decreased materially from 1880 to 1890. This decrease was probably largely due to a fall in the price of the product. During the past decade there has been a marked recovery in the prosperity of this industry, and the value of the product in the year covered by the census of 1900 is nearly one-half greater than by that of 1890.

The shipbuilding industry shows much more rapid progress during the decade from 1890 to 1900 than during that which preceded. The value of vessels built in the last census year was $73,444,753, an increase of more than 80 per cent in ten years. The development in the construction of vessels on the Great Lakes has been especially marked. The reason why the development there has been so much more rapid than upon either seacoast is connected with the general causes of the decline in the American merchant marine. Until recently the cost of iron and steel, of which modern vessels are so largely constructed, was materially higher in the United States than

in Great Britain, while the wages of labor in American shipyards are much higher than in those abroad. At the same time, the fact that the wages of sailors and the cost of operating vessels under the American flag are so much higher than under foreign flags, has been a still more powerful influence depressing American shipping. It is probable that the difference between the cost of constructing vessels in the United States and foreign countries is rapidly decreasing.

American shipyards are asserted by well-informed witnesses to be better equipped than those of other countries. According to Mr. Cramp, the British are beginning to make considerable use of American devices in shipbuilding. Comparisons of the cost of construction are difficult because the actual character of the product is never the same in two cases. Mr. Cramp, however, estimates roughly that it costs 15 per cent more to construct a first-class steamship in American yards than in English yards. The tariff obviously can do nothing to protect the shipbuilding industry, since the ships which come into competition with those of foreign countries are used only on the high seas. The question of encouragement to the establishment of an American merchant marine, whether by subsidies or other methods, is one well deserving consideration. This matter is also discussed in connection with its bearings on the subject of our foreign trade. (See p. 576.)

The silk industry in the United States has been developed chiefly since the civil war. In the early seventies, according to witnesses, the yearly production in this country was only about $5,000,000. The census of 1880 reported the value of the gross product at $41,000,000. Ten years later the product had more than doubled, while in 1899, as seen by the above table, it amounted to $107,256,258, an increase of about 25 per cent over 1889. The United States now ranks first among the civilized countries in the quantity of silk manufactured, and second only to France in the value of the product. It is stated that American manufacturers now supply from two-thirds to three-fourths of the home demand. The dyeing and printing of silks has also been rapidly developed in the United States, so that at present American manufacturers even dye and print some imported silks. Witnesses hold that in some respects American dyers are superior to those abroad, while the best looms in the world are made in this country, and the system of production is more highly organized and economical than anywhere else.

The beet-sugar industry in the United States, as is well known, is virtually entirely new. Its present importance may be seen from the above table. This subject is discussed more fully under the head of Agriculture.

The refining of petroleum has developed steadily and rapidly from the first discoveries of oil in Pennsylvania, nearly the whole world

demanding this cheap illuminant, of which the United States has by far the most valuable and available supply. The value of the product of refined petroleum by the census of 1900 was $123,929,384, nearly 50 per cent greater than by that of 1890.

The enormous development in the publishing business, particularly in the printing of daily newspapers, has greatly increased the demand for printing paper. Notwithstanding a fall in price, which, in 1899. had not yet been offset by the recent advances, the aggregate value of the product of this industry increased by nearly $50,000,000 from 1889 to 1899, the percentage of increase being about 60 per cent. The value of the product in the latter year was $127,286,162.

Another industry which shows a very marked increase is the manufacture of coke (see also the discussion of this subject in connection with the report on mining). The great increase in the production of iron and steel during the decade from 1890 to 1900 has caused a rapidly growing demand for coke to be used in its manufacture, while coke is also being more and more widely used for other purposes. The value of the output by the census of 1900 was $35,585,445, considerably more than double that reported in 1890. The high price of coke in 1899 accounts in part for the great increase in value of the product, as shown in the table, since the cost of coal, the chief raw material, increased very much less rapidly.

The cotton industry is treated at some length in another place.[1] It will be sufficient here to call attention to an increase of about one-fourth in the annual production of cotton goods during the decade, the cost of the materials used having increased at the same time only 14 per cent. This apparent discrepancy is due to some extent to a fall in the price of cotton (1899), but must be explained for the most part by the superior quality of the goods manufactured.

The products of the forests continue to increase, notwithstanding the substitution of other materials for wood for many purposes. The products of the sawmills (including the planing mills operated in connection with them) and timber camps of the United States increased during the decade 29.4 per cent. The minor forest products—turpentine, rosin, and tar—show a much greater increase, having more than doubled during the decade.

The figures for gas include the product of fifteen establishments operated by municipalities. The quantity of gas manufactured was 83.7 per cent greater at the end than at the beginning of the decade; but owing to reductions in price, which have reduced the average price from 1.42 to 1.035 per thousand cubic feet, the value of the product shows an increase of only 32.9. per cent.

Great progress has been made in recent years in the utilization of cotton seed. The Twelfth Census shows 357 establishments engaged

[1] See p. 510.

in crushing and working up the seed. The capital of these establishments used in these operations has not been differentiated from the capital employed in other operations. The cost of cotton seed crushed is given as $28,632,616, and the value of the products as $42,411,835, showing an increase in value of 48.1 per cent by manufacture. The products consist of oil (unrefined) to the value of $21,390,674; cake and meal, $16,030,576; hulls, $3,189,354; linters, $1,801,231.

Industries differ greatly in respect to the relative value of raw materials as compared with finished product. The importance of an industry from a strictly manufacturing standpoint depends more upon that part of the value of the total product which is due to the manufacture itself than upon the total value. By subtracting the cost of the materials from the value of the finished product we obtain the value added to goods through manufacture, made up of cost of manufacture and of return on investment, plus a few minor unascertained items.

It will be seen that in the glass industry the cost of materials, according to the census of 1900, is considerably less than one-third the value of the finished product. The proportion in the turpentine and rosin industry is roughly the same. In the manufacture of clay products and gas the raw material is still less important, costing less than one-fourth as much as the value of the product in one case and but little more than one-fourth in the other. In the shipbuilding industry the raw material is worth considerably less than half the value of the finished product. In the silk, cotton, and paper and pulp industries the raw materials cost less than three-fifths as much as the value of the product, and the same is true of lumber and timber. In the manufacture of leather, on the other hand, the raw materials cost more than three-fourths as much as the value of the finished product, and in the case of petroleum four-fifths as much.

It is impossible to find, from the figures for these few industries, any general tendency of change from 1890 to 1900 in the proportion which the cost of raw materials bears to the value of the finished product. In most of the industries the value due to manufacture has increased in quite nearly the same proportion as the value of the entire product, and any departures from this rule might be due to so many different and complicated influences that no judgment may be based upon the figures.

PROPORTION OF DOMESTIC CONSUMPTION SUPPLIED BY DOMESTIC PRODUCTION.

A notable feature connected with the increased output of American mills and factories is the extent to which American goods are supplanting foreign-made goods in our markets. There has been throughout the century a very great increase in the proportion of the Amer-

ican demand which is supplied by our manufacturers. Acceleration in this tendency during the past few years of high prosperity has been especially marked. In most lines of manufacture the United States is now supplied almost altogether by home producers, and there is scarcely any class of goods of which the domestic production is not increasing more rapidly than the importation.

As is more fully set forth in the discussion of foreign trade below, American imports of manufactured articles have fallen off very materially during the past decade. In the fiscal year 1900 they were fully 18 per cent less than in 1890. This is believed to be due in large part to the greater sufficiency of our manufactures to the needs of our people, but also to a considerable extent to methods of undervaluation by Europeans, which defy detection. The fact that the number of American importing houses has largely declined in recent years, and that foreign exporting houses have established branches in America, to which they can send private invoices different from those prepared for custom-house inspection, indicates a practice that is more easily understood than broken up. But it is the low valuations made for the customs which enter into the statistics. Beyond doubt, the aggregate importations, and especially those from certain countries, are much larger than the figures of values show.

On the other hand, the statistics above given, according to the census of 1900, show that the value of the domestic product for manufacturing industries, as a whole, has increased during the decade not less than 38.9 per cent. At the same time the relation which the volume of American production bears to the total consumption of products in the home market can not be accurately determined from such statistics. It is certain that the industrial changes during the past decade have tended to increase that proportion with as great rapidity as it increased in almost any preceding period of equal length.

Among the few industries for which we have census statistics in 1900, the glass and silk industries are the only ones in which, for some decades past, any considerable proportion of the product has been imported. In both these industries the proportion of the domestic product is rapidly increasing. While the domestic output of silk manufactures increased fully 25 per cent in the decade from 1890 to 1900, the importations in the fiscal year 1900 were 20 per cent less than in 1890. In the earlier year the domestic production was nearly 70 per cent of the entire consumption, while in 1900 it was nearly 80 per cent. The domestic production of glass increased fully 40 per cent from 1890 to 1900, while the importations decreased more than 30 per cent. In the former year the importations were equal to nearly one-fifth of the domestic production, while in 1900 they were considerably less than one-tenth of the domestic production. Of

paper and pulp the United States now exports more than twice as much as it imports, the imports in 1900 amounting to no more than 3 per cent of the domestic production. Our imports of unmanufactured leather in 1900 amounted to $6,477,770, as compared with the domestic production of over $200,000,000.

In respect to certain industries, not covered by the recent census figures, witnesses well versed in the conditions have made rough estimates as to the proportion of the domestic consumption supplied by our own manufacturers. Thus, it is stated that 90 per cent of the home demand for carpets and other floor coverings is supplied by American mills, whereas fifty years ago the situation was almost completely reversed, the imports making up some 90 per cent of the home consumption and the American product representing only about 10 per cent. Nearly nine-tenths of the total amount of linen thread consumed in the country is the product of American factories, the only linen thread imported being that which is used in the manufacture of fish nets. It is estimated, furthermore, that the amount of linen thread consumed in the United States is equal to the amount consumed in all the rest of the world. Practically no boots or shoes are imported, and the same is true of locomotives and of many other products.

Cotton machinery of American manufacture has largely supplanted that of foreign make, and there has been therefore manifestly a great increase in the volume of American production. As the machinery in use in American mills, much of which in the past was imported, becomes antiquated, the mills are fitted out in most cases with machinery of home production. In fact, one cotton manufacturer states specifically that, although the mills with which he is connected are now equipped with English machinery, because at the time of their establishment that was considered to be superior to American machinery, yet if his mills were to be equipped to-day American machinery would in all probability be purchased. American silk mills also, although formerly equipped with imported machinery, are now for the most part supplied with machinery produced in this country.

In some cases the growth of American industry has been very marked, and the substitution of American goods for those of foreign manufacture has taken place with surprising rapidity. Although the manufacture of sanitary wares, for instance, was first undertaken in this country as recently as 1872, yet to-day practically no such goods of foreign manufacture are sold here. An almost similar situation exists in the tile industry. Although the manufacture of tiles was begun in the United States as lately as 1880, it is estimated by a manufacturer of these goods that fully 90 per cent of the American market is supplied by American manufacturers.

In all of these industries, with the exception of that of linen thread,

a considerable quantity of goods is exported, so that the total growth of business, and the total increase of output in this country in these industries, is not by any means fully represented by the increased sales for home consumption.

LOCATION OF INDUSTRIES.

Many causes combine to determine the location of particular industries. The presence of water power is often a determining factor. The industrial supremacy of New England is attributed to this cause, and it is evidently the presence of the Falls of St. Anthony which caused the development of Minneapolis as a flour-milling center, although the water power has now been largely superseded by steam. Climate is in some cases an important consideration; thus New Bedford has an advantage in cotton manufacture on account of its humid atmosphere. Accessibility to raw materials is another important factor, as is also nearness to the principal markets for the product. It is not always possible to locate a factory conveniently with reference to both raw materials and the market, and in such cases the location will often be determined by the railroad rates on the raw material and on the finished product, respectively. In the modern industrial world, indeed, the cost of transportation is a more important consideration than mere proximity to the source of supply or to the market. A manufacturer will, however, consider the relative cost of labor in different localities, and where special skill is required it may be wise to locate a factory where manufacture of the same kind has already been conducted for some time, and where the working people are therefore accustomed to the processes, instead of in a new locality where the employees would have to be trained for their work from the beginning. This is doubtless one reason why factories making similar products are so often found near each other. Where the product of one factory is used as the raw material of another, there is a very obvious advantage in proximity. There seems to be a general tendency to concentrate for the manufacture of particular classes of goods in one locality, where at least the greater part of the product is turned out. Dr. Fred S. Hall has compiled a list of localized industries in Massachusetts and Connecticut, showing by the actual number of establishments the localization of the manufacture of whips at Westfield; of chairs at Gardner and vicinity; of spectacles at Southbridge; of snuff at Newbury; of horn goods at Leominster; of brass goods in the Naugatuck Valley; of jewelry at Attleboro; of hats at Danbury; and of shoes at Lynn, Haverhill, and Brockton. The most remarkable instance of localization to which he calls attention, however, is Gloversville, N. Y., which is almost entirely given over to the manufacture of gloves and of articles such as leather, buttons, boxes, etc., which are used in the

manufacture or packing of gloves. Although the city is small, it has not less than 131 glove factories.

Finally, the location of industries is affected by legislation. Manufacturing establishments are in some States exempted from taxation for a certain number of years in order to attract capital, and, on the other hand, restrictions and regulations imposed by factory laws sometimes have a tendency to send new industries, at least, into States where such legislation is less stringent than elsewhere, or even lacking altogether.

MIGRATION OF INDUSTRIES.

Since many considerations combine to determine the location of industries, there are various possible ways in which changed conditions may cause the movement of capital from one part of the country to another, or a shifting of the center of greatest industrial development. Between 1890 and 1900 the manufactured products of New England increased 25.3 per cent, while those of the Southern States increased 58.9 per cent. The increase of population in any locality is both cause and effect of the development of industries, and hence it is not surprising to find a marked increase in manufacturing activities in the West during the past decade. The introduction of new processes may alter the relative importance of the various advantages sought by manufacturers when locating their establishments, and so produce a migration of industry. The industrial development of one part of the country is not necessarily at the expense of another part, even as regards particular industries, for the new development may be in response to a demand for a somewhat different kind or grade of goods. Thus there is a division of production between Northern and Southern cotton mills, the former making the finer grades and the latter the coarser, including a considerable quantity for export to oriental countries.

It is probably labor considerations rather than the nearness of raw material, which have encouraged the development of cotton manufacture in the South. The proximity of the raw material is perhaps more an apparent than a real advantage, because the railway rates on cotton from Memphis, for example, to Lowell and other Massachusetts points are lower than to points in North and South Carolina.[1] A cotton mill located in a cotton district will, of course, receive some cotton from nearby cotton gins within hauling distance; but where the raw material must be sent by railroad, distance is not a very important factor, and the South's advantage in this respect is at least offset by heavier freight charges on manufactured goods.

It is common in the Southern States for manufacturing establishments to be exempted from taxation for a period of years. In Lou-

[1] Reports Industrial Commission, Vol. X, pp. 481, 482.

isiana property employed in mining and in various kinds of manufacturing is exempt from parochial and municipal taxation until 1910 by constitutional provision. The Southern States are also freer from restrictions on labor, especially the labor of women and children, than the States of New England. Southern mills, often operated by Northern capital, in several cases as auxiliaries of Massachusetts corporations, have earned dividends on their stock when the Northern mills have failed to do so. One result is that capitalists hesitate to invest in cotton manufacture in Massachusetts; another is that New England men have supplied the capital for many of the Southern mills. It seems to be the general opinion among manufacturers that the cheaper grades of cotton goods will be manufactured hereafter in the South; and some express the opinion that no new cotton mills will now locate in Massachusetts, except for the production of the finest goods. It is said that print cloths are produced in the South and delivered in Lowell for less than the cost of production in Lowell. Besides lower wages, greater freedom as to hours of labor and the employment of children, and lighter taxation or exemption from taxation, the Southern mills have the advantages of cheap fuel, abundant water power, and a smaller expense for buildings, and new mills may also be said to have some advantage in up-to-date equipment. On the other hand, the factory operatives of the South are less skilled than those who have been long in the business in New England, but they are of good American stock, and are said to be learning rapidly.

Between 1880 and 1890 the production of cotton goods in Massachusetts increased less than 39 per cent, while the product of Georgia nearly doubled, and that of North and South Carolina increased more than 250 per cent. The product of Kentucky, Alabama, and Mississippi also about doubled, and that of Tennessee nearly tripled. The consumption of cotton, as shown by the accompanying table, has increased by leaps and bounds in the South during the past twenty years, while it has remained comparatively constant in the North.

Consumption of cotton, North and South.

[Commercial Yearbook, 1901, p. 341; compiled from the Financial Chronicle's figures.]

Years.	Taken by mills.	
	North.	South.
	Bales.	*Bales.*
1879–80	1,624,805	179,000
1884–85	1,419,689	286,000
1889–90	1,792,850	549,478
1894–95	2,154,170	853,852
1895–96	1,670,744	915,810
1896–97	1,862,565	1,024,482
1897–98	2,276,079	1,227,939
1898–99	2,247,092	1,400,026
1899–00	2,192,671	1,599,947

The following tables exhibit the rapid increase in the South in the number of spindles, which have practically doubled since 1893–94.

It is noteworthy that the new cotton mills built in the Southern States in 1900, for example, were more than three times as numerous and had more than four times as many spindles as those erected in the North the same year.

Cotton spindles, North and South.

[Commercial Yearbook, 1901, p. 340, from the Financial Chronicle.]

Spindles.	1893–94.	1894–95.	1895–96.	1896–97.	1897–98.	1898–99.	1899–1900.
North	13,550,000	13,700,000	13,800,000	13,900,000	13,900,000	13,950,000	14,050,000
South	2,291,064	2,433,248	3,011,196	3,456,537	3,670,290	3,987,735	4,540,516
Total	15,841,064	16,133,248	16,811,196	17,356,537	17,570,290	17,937,735	18,590,516

Spindle growth—combined textiles.

[Commercial Yearbook, 1901, p. 353; compiled from Textile World.]

	1895.	1896.	1897.	1898.	1899.	1900.
New England:						
New mills	211,662	240,352	35,840	.....	315,000	185,700
Enlargements	66,156	4,560	31,240	10,000	22,500	.....
Southern States:						
New mills	493,280	382,045	256,780	158,750	669,970	1,109,584
Enlargements	152,800	42,000	150,094	159,624	298,414	.....
Middle and Western States:						
New mills	.....	24,000	4,000	7,000	78,000	11,500
Enlargements	14,000	10,000	.....	.....	12,000	.....
Total	937,898	702,957	477,954	253,374	1,390,884	.....

Distribution of cotton-spindle growth in new mills in 1900.

[Commercial Yearbook, 1901, p. 354; compiled from Textile World.]

	Number of new mills.	Spindles.	Looms.
South:			
Alabama	15	115,120	1,538
Arkansas	1	5,000	.....
Georgia	36	240,036	3,166
Mississippi	4	25,000	1,090
North Carolina	33	311,600	5,053
South Carolina	27	317,708	6,500
Tennessee	6	49,500	724
Texas	7	35,620	780
Virginia	2	10,000	.....
Total	131	1,109,584	.....
North:			
Connecticut	3	70,000	2,000
Illinois	1	.....	.....
Massachusetts	11	115,700	1,650
Michigan	1	.....	.....
New Hampshire	1	.....	600
New Jersey	3	11,500	410
New York	5	46,240	.....
Pennsylvania	9	3,000	1,580
Rhode Island	6	.....	.....
Total	40	246,440	.....

MANUFACTURES AND URBAN GROWTH.

Several of the causes which affect the location of industries have combined to favor the concentration of manufacture in cities. Where the dependence is upon water power, the tendency for many industries to group themselves about a waterfall may be the cause of the growth of a city. Raw materials, even though originating in the country, may be most conveniently assembled for manufacturing purposes in a city, especially in a railway center, to which the materials come from various directions. The city has decided advantages in the marketing of products, whether for local consumption or for transportation to a distance. It is also probable that the railroads, by making lower rates between competitive points than elsewhere, have contributed to the industrial growth of the larger cities. In so far as one industry is dependent upon others, there will be a tendency to the concentration of manufacture in cities at least large enough to contain a number of establishments. Generally speaking, the supply of labor is more abundant in the city than in the country.

At the time of the census of 1890, as shown by the following table, fully two-thirds of the manufacturing products of the country, measured by value, were produced in the 165 principal cities, where more than three-fifths of the capital and labor employed in manufacture was located. The number of establishments in these cities was only a little more than half of the total, showing that the establishments in the principal cities were larger, as a rule, than those in smaller places.

Manufactures in the United States and in the 165 principal cities, 1890.

[Census of 1890, Manufactures, Vol. II, page XI.]

Items.	The United States.	The 165 principal cities.	Percentage for cities of the total for the United States.
Number of establishments reporting	355,415	186,147	52.37
Capital, direct investment	$6,525,156,486	$3,996,705,734	61.25
Average number of employees (aggregate)	4,712,622	2,907,882	61.70
Value of products	$9,372,437,283	$6,278,338,476	66.99

The following table shows a decided increase in the manufacturing industries of the 100 principal cities during the decade from 1880 to 1890, much more rapid than that for the country as a whole:

Manufactures in 100 principal cities, 1880–1890.

Items.	1880.	1890.
Number of establishments reporting	78,033	167,844
Capital	$1,384,879,147	$3,524,334,525
Average number of employees	1,431,079	2,581,237
Males above 16 years	1,008,196	1,990,332
Females above 15 years	330,059	538,491
Children	92,821	52,414
Value of products	$3,018,413,756	$5,621,258,583

There is some reason for believing, however, that the tendency toward concentration of manufacture in large cities reached its maximum about 1890 or soon thereafter, and that the present tendency is rather in the direction of the establishment of manufactories in small and medium-sized places. The census bulletins which have been published for some of the States indicate in several cases that the manufactures of the principal cities constituted a smaller percentage of the product of the entire State in 1900 than in 1890. It is a matter of common knowledge that many establishments of importance have been removed from cities, either to suburbs or other small places, mainly, perhaps, because of the lower prices of real estate; and in some cases factories have been built in the open country, partly as a matter of real estate speculation, and villages have grown up around them. The small places are apt to offer the advantages of a lower tax rate, as well as less expensive sites, and in some cases have even offered exemption from taxation for a period of years and a bonus in the form of a free building site or otherwise.

So far as power is concerned, there is less need for concentration when steam is used than when the dependence is upon water power. The electrical transmission of power seems likely to revive the importance of natural water powers, while at the same time making such power available within a wider radius, so that it will not necessarily tend to the growth of large cities. A manufacturer sometimes abandons a large city to escape the demands as to wages and otherwise of trade unions, which are more thoroughly organized in the cities than in the villages.[1] On the whole, the advantages offered by a small place are so great that manufacturers often find it cheaper to remove to such places and maintain in the large city an office for buying and selling, securing capital, etc. Even in the matter of railroad rates the advantage of the large cities has disappeared in some cases. Thus nearly every shipping point in New England now enjoys the same freight rates to the South and West as New York City.

PROGRESS OF THE IRON AND STEEL INDUSTRY.

No other group of manufacturing industries is to-day so important to the general business of the United States and to its position in the world's competition as the production of iron and steel, and of articles of which they are the chief components. Census figures for the progress of these industries up to 1900 are not available. Annual reports are made by producers, showing the output of the cruder materials, and from them we may judge the tremendous rate of increase which has marked the past few years of prosperity, but we can not ascertain the degree to which increased elaboration has been put into these

[1] Weber, Growth of Cities, pp. 204, 205.

cruder products in the manufacture of machinery, agricultural implements, and the many other commodities of which they become the chief materials. The figures of exportations of iron and steel products and machinery, as shown on pages 551–2, give some idea of the enormous recent expansion in these industries.

In connection with the report on Mining will be found a diagram (see page 214) giving the annual production of pig iron and of steel in recent years in the leading countries. It will suffice here to reproduce the figures for the United States for quinquennial intervals, together corresponding with figures for the production of rails.

Production of leading articles.

[Taken from the reports of the American Iron and Steel Association and United States Geological Survey, 1900.]

Year.	Production of pig iron in the United States.	Production of all kinds of steel in the United States.	Production of iron and steel rails in the United States.	Production of pig iron in Great Britain.
	Gross tons.	*Gross tons.*	*Gross tons.*	*Gross tons.*
1880	3,835,191	1,247,335	1,305,212	7,749,233
1885	4,044,526	1,711,920	976,978	7,415,469
1890	9,202,703	4,277,071	1,885,307	7,904,214
1895	9,446,308	6,114,834	1,306,135	7,703,459
1899	13,620,703	10,639,857	2,272,700	9,421,435
1900	13,789,242	10,188,329	2,385,682	8,908,570

From this table it will be seen that the production of pig iron increased very rapidly from 1880 to 1890, that during the years of depression it so fell off that the figure for 1895 was little greater than in 1890, but that (beginning, in fact, with 1898) the output has increased with wonderful rapidity, reaching in 1899 the unprecedented figure of 13,620,703 tons, an amount slightly surpassed by the production of 1900. The general prosperity of the country after 1898 created an immense demand for permanent improvements of many sorts requiring iron and steel. Construction which had been postponed during the time of depression was entered upon with enthusiasm. The extraordinary increase in the price of these products which followed this demand is familiarly known. Pig iron, which often during the period of depression was sold at less than $10 per ton, brought more than $25 per ton at the end of 1899 and the beginning of 1900. A reaction necessarily took place and the price reached a more normal level, but it still remained very much higher than for a long time before. The demand for the products of iron and steel abated but little. In the first half of 1901 the output was 7,674,613 tons, slightly more than for the first half of 1900, while in the fall of the year the production was still heavier. The weekly output at the beginning of September, 1901, was about 300,000 tons, but it had advanced by

November 1 to 320,824 tons, which would amount to an annual production of 16,500,000 tons.

As is well known, a constantly increasing proportion of iron is turned into steel. The superior metal is replacing the inferior in almost all uses, not only in new construction, but in reconstruction. The production of steel of all sorts in the United States increased more than eightfold from 1880 to 1899. A conspicuous feature of the production of steel is the increase in the amount of open-hearth steel produced, as compared with Bessemer steel. This is shown in the table below, by which it appears that, while the output of Bessemer steel somewhat more than doubled from 1890 to 1899, that of open-hearth steel multiplied nearly six times in the same period. In 1900 the production of open-hearth steel increased yet more, while that of Bessemer decreased. In 1890 the production of open-hearth steel was less than one-seventh as great as that of Bessemer steel. By 1895 the output by the open-hearth process was considerably over one-fifth of the amount by the Bessemer process, while by 1899 it was nearly 40 per cent, and in 1900 over one-half as great as the Bessemer production. In Great Britain the open-hearth process produces much more steel than the Bessemer process.

Production of crude steel.

[In long tons.]

	1890.	1895.	1899.	1900.
Bessemer	3,688,871	4,909,128	7,586,354	6,684,770
Open-hearth	513,232	1,137,182	2,947,316	3,398,135
Crucible	71,175	67,666	101,213	105,424
Miscellaneous	3,793	858	4,974	
Total	4,277,071	6,114,834	10,639,857	10,188,329

As is more fully pointed out in connection with the discussion of transportation, the great era of new railway construction in the United States had been completed by 1890. The demand for rails for new roads, even in the highly prosperous recent years, has been less than during the eighties. At the same time, for many reasons, the railroads are rapidly replacing iron rails by steel rails, and steel rails of light weight with those of heavier weight. The demand for rails, therefore, has been very strong during the recent years of railway prosperity. The output of rails in 1895 was much less than in 1890, but the production of 1900 was greater than that of 1890 by more than 25 per cent, amounting to 2,385,682 tons.

The growing supremacy of the United States in the production of iron and steel is also shown by the table on the opposite page. The production of pig iron in Great Britain remained virtually stationary from

This table shows that in earlier years of the decade, before the industry had acquired a start, the United States imported more than 420,000,000 pounds of tin plates and produced only 13,600,000 pounds. By 1898–99 the imports had fallen to one-fourth of their former amount, while the domestic production was more than seven times greater than the amount of imports. Even as compared with 1895–96, the domestic production in 1898–99 had multiplied more than two and one-half times. The demand for these plates is strong and steadily growing, and a new industry of great value to the United States has been established.

TEXTILE MANUFACTURES.

COMBINED INDUSTRIES.

The United States can scarcely claim such a supremacy in the textile industries as in those of iron and steel. The cheaper labor of foreign countries and the earlier establishment of these industries there caused the production of textiles in several countries, and especially in Great Britain, to be greater in proportion to the population than in the United States. Nevertheless, the progress in our textile industries has been steady and rapid, as is seen from a table compiled from the censuses:

Combined textile industries.

Combined textiles for year—	Number of establishments.	Capital.	Average number of employees, and total wages.		Cost of material used.	Value of products.
			Employees.	Wages.		
1850	3,025	$112,513,947	146,897	.....	$76,715,959	$128,769,971
1860	3,027	150,080,852	194,082	$40,353,462	112,842,111	214,740,614
1870	4,790	297,694,243	274,943	86,565,191	353,249,102	520,386,764
1880	4,018	412,721,496	384,251	105,050,666	302,709,894	532,673,488
1890	4,114	739,973,661	511,897	175,547,343	421,398,196	721,949,262

From this table it will be seen that, during the forty years covered, the capital invested in textile industries multiplied more than six and one-half times. The number of employees increased more than three and one-half times, and the value of the product more than five and one-half times. There is every reason to believe that the census of 1900 will show in the combined textile industries a capital invested of nearly a billion of dollars, and a value of products of approximately the same amount.

The increased prosperity of the textile industry for the past two or three years may be seen by the figures for the number of new mills

constructed and the number of new spindles put into operation. These figures are shown in the following tables:

New mills constructed.

[Commercial Year-book, 1901, p. 353, compiled from Textile World.]

	1895.	1896.	1897.	1898.	1899.	1900.
Cotton	59	66	49	34	91	171
Woolen	33	31	53	25	49	48
Knitting	80	85	71	46	57	109
Silk	10	17	43	19	32	43
Miscellaneous	16	8	14	10	16	29
Total	198	207	230	134	245	400

According to these tables new textile mills have been constructed from year to year in very considerable numbers, despite the depression beginning with 1894. Doubtless in some instances the mills built in 1895 and 1896 had already been begun before the depression set in. The year 1898, which was the first of returning prosperity, shows the smallest number of mills completed—134. In the next year the effect of advancing prices and demand is seen in an increase in the number of new mills to 245, while in 1900 no less than 400 new textile mills were put in operation. Of these mills 171 were cotton, 109 knitting, 48 woolen, and 43 silk. The increase in the number of silk mills constructed is especially striking.

The increase in the number of new spindles in textile mills during 1899 and 1900 is largely due to the construction of these new mills.[1] In 1895 the number of new spindles was very large—937,898. The result of the business depression was such that, in the two years 1897 and 1898 together, the number of new spindles was very much smaller than in 1895. In 1899, on the other hand, 1,390,884 spindles were put into operation, a figure which was even greatly exceeded by the year 1900. The spindles in new mills in the Southern States in 1899 were 669,970, while in 1900 they were 1,109,584.

COTTON GOODS.

The manufacture of cotton goods was one of the first to be strongly established in the United States. The growth of the industry has been steady. Though it has never been so conspicuously prosperous and profitable as the iron and steel industry has been at special periods, it has in general returned fair profits to the capital invested in it. Several witnesses before the Industrial Commission testified that the dividends paid by New England cotton mills have ordinarily been about 6 per cent on actual investment. Many of the mills in

[1] See table on p. 503.

New England are undercapitalized, so that their apparent earnings are still larger.

The progress of the cotton manufacturing industry has already been shown by the figures for 1880, 1890, and 1900.[1] Another view of its increasing importance may be obtained by comparing the number of bales of cotton taken by the mills from year to year. It should be remembered, however, that, as time goes on, the raw cotton is more and more highly elaborated by the mills. Improvements in methods make possible the production of finer grades of goods at costs formerly prohibitive to the great body of the people. For this reason an increase in the consumption of cotton seems to have been accompanied by a still greater increase in the amount of manufacturing performed.

The following table shows the amount of cotton taken by the mills of the United States for selected years:

Consumption of cotton, United States.

Years.	Total bales.	Years.	Total bales.
1879–80	1,808,805	1896–97	2,887,047
1884–85	1,685,689	1897–98	3,504,018
1889–90	2,342,328	1898–99	3,647,118
1894–95	3,007,522	1899–1900	3,792,618
1895–96	2,586,554		

From this table it may be seen that the consumption of cotton by the mills of the United States has more than doubled in twenty years. From 1879–80 to 1889–90 the increase was more gradual, the figure of the latter year exceeding that of the former by about 30 per cent. The consumption increased very rapidly in 1890–91 and 1891–92, but fell off somewhat in the next two years. The depression beginning with 1893 did not serve to prevent a very large consumption of cotton in 1894–95. For the next two years there was a falling off, followed by a very rapid increase. The consumption of cotton in 1897–98 was greater by more than one-fifth than in the year before, while in 1899–1900 it was considerably larger still. The amount of cotton taken by the mills in the last-named year exceeded that taken in 1889–90 by more than 60 per cent.

The cotton industry in the United States is progressing somewhat more rapidly than that of any other country except India. The average consumption of cotton in this country for the six years from 1872–73 to 1877–78 has been estimated at 1,184,000 bales, while the consumption of the whole world was estimated at 5,494,000 bales, giving to the United States about 21½ per cent of the total. For the six years from 1890–91 to 1895–96, the average consumption in the

[1] See pp. 489, 493, 496.

United States was about 2,512,000 bales out of a total, including India, of 10,514,000 bales, giving the United States a proportion of nearly 24 per cent. The proportion of the consumption of cotton assigned to the United States in 1899–1900 was much larger, fully 29 per cent.

Great Britain, notwithstanding its much smaller population, has until the most recent years consumed more cotton than the United States. British textiles have been exported largely over the entire world. For the years 1872–73 to 1877–78 the average consumption of cotton in Great Britain was estimated as considerably more than twice that in the United States. Even for the years 1890–91 to 1895–96 the British consumption was one-fourth greater than our own. On the other hand, according to the estimates for 1899–1900 the American consumption exceeded that of Great Britain by more than 300,000 bales, the British takings of cotton being estimated at 3,519,000 bales and those of the United States at 3,856,000.

Another view of the increase in the cotton industry may be secured by considering the number of spindles in operation. In 1860 the number of spindles reported by the census was 5,235,727. This number was practically doubled in 1880, while in 1890 the aggregate number of spindles was 14,188,103. By 1900 the number of spindles was 19,050,952, or an increase of more than one-third since 1890.[1]

The relative importance of the cotton-spinning industry in the different countries of the world may also be roughly judged by the number of spindles in operation. It should be remembered, however, that in many cases spindles lie idle, while those earlier put into operation are less efficient and produce a much smaller quantity of yarn in a given time. Thus, it is stated by witnesses that American spindles of recent make are of almost unlimited speed capacity.

Estimated spindles in Europe, the United States, and India, 1900.

United Kingdom	46,000,000
Continent	33,000,000
Total Europe	79,000,000
United States	18,590,515
India	4,400,000

From this table it would appear that the number of spindles in the cotton mills of Great Britain is about two and one-half times as great as in the United States, and very considerably greater than on the entire Continent of Europe. The number of spindles in the United States is estimated at somewhat more than four times the number in India.

The spindles in the United States are increasing much more rapidly

[1] Figures from Commercial Year Book, 1901, page 340, based on census and reports of Financial Chronicle.

than in the United Kingdom, where, indeed, the increase since 1883 has been less than 10 per cent. On the other hand, the number of spindles on the Continent of Europe, especially in Germany, is rising with great rapidity. For 1883 it was estimated at 22,450,000, and for 1900 at 33,000,000—an increase of nearly 50 per cent, about the same as that in the United States for the same years. During the same period India had increased her spindles, as well as her cotton consumption, nearly two and one-half times.

THE WOOLEN INDUSTRY.

Statistics of the woolen industry are much less complete than those of the cotton industry. The censuses up to 1890 show that the most rapid increase in the value of woolen products was from 1860 to 1870, during which time they multiplied more than two and one-half fold. From 1870 to 1890 the value of products rose from $217,668,826 to $337,768,524. The only basis of comparison since 1890 is the estimated amount of wool retained for consumption from the domestic clip and the imports. The amount of wool so retained was 435,848,000 pounds in 1890–91, and rose, despite the depression, to 614,627,000 pounds in 1896–97. Curiously enough there has been a very considerable decrease in the consumption of wool since that time. It fell to 329,362,000 pounds in 1898–99, and even in 1899–1900 was nearly 200,000,000 pounds less than in 1896–97. The takings of wool, however, are not a very accurate indication of the amount of product of finished woolens. It is stated by witnesses before the Industrial Commission that the condition of the business during 1900–1901 was somewhat depressed, and that the general capacity of the woolen mills is in excess of the consumption of the country.

II.—PROGRESS IN INDUSTRIAL METHODS.

GENERAL EXTENT AND SIGNIFICANCE.

The beginnings of the age of invention and machinery may be traced as far back as the date of the renaissance of science, at the commencement of the seventeenth century, which was contemporaneous with the revival of intellect in many other directions, and with the beginnings of general individual liberty. Substantial industrial progress, however, practically began with the nineteenth century. The great industrial movements of the world may be considered as characteristic of the century just ended. The introduction of new inventions, capable of giving the worker a multiplied productiveness, higher efficiency, skill, and accuracy, together with the growth of the system, now general, of large-scale production, and the contempora-

neous evolution of extensive and economical systems of distribution, resulted often in the temporary displacement of individuals and of groups of individuals and in serious embarrassment and suffering. The final outcome, however, has been an increase in the number of persons employed, the multiplication of the productive power of the community, and enormous reduction in cost of manufacture and of distribution, and hence in the market price, of every staple. It has not been true that, as a distinguished writer on economics has put it, there "has been a loss of labor" to thousands of men; on the contrary, there has been a demand for more efficient, machine-using men, not only to equal the full amount of the labor displaced, but far in excess of that quantity. A tremendous movement in the direction of aggregation of people into the centers of manufacture, out of the country into the city, has been one of the most striking phenomena accompanying this great revolution in the industries. Other evidences of the increased demand for labor are seen in the scarcity of domestic servants and their constantly increasing compensation, coming largely from the stronger attractions of the shop, and in the difficulty experienced by agriculturists in securing permanent employees, but more especially harvest hands. Displacement of labor has been an incident of industrial progress, but the larger and more important effect of improved machinery and systems of production has been the multiplication of the productive power of each man and of the world, and a great increase in the wants of mankind to be supplied.

The gun maker performs as much productive work in the day of ten hours as did his predecessor, at the beginning of the art, in a month of fourteen or sixteen hours of daily labor. But the increased demand for guns, coming from their cheapness and excellence and from the added wealth of the people, not only takes all that he can produce, but demands a multiplied number of workers. Similarly, the manufacture of boots and shoes has developed enormously; the proportion of people going barefooted has been reduced to insignificance; the average citizen wears a finer shoe than did the wealthiest at the beginning of this great industrial change; while the number of people employed has increased. In some departments of this trade one employee has five or six times the productiveness of the workman of fifty years ago, and yet the numbers employed are increasing.

Probably in no other country has the progress of the industrial system been so rapid as in the United States. A study of our economic history shows that the introduction and improvement of machinery, and the progress in methods of industrial organization and administration, have resulted in making the individual more productive, and worth more per unit of his time; that he has therefore received continually a greater compensation; that his increased income has given him increased purchasing power, and that this gain in purchasing power

has so increased the demand for manufactured articles as much more than to counterbalance the original displacement of labor by these improvements. Such displacement of labor as has been observed has been temporary and has affected but a fraction of the community; it has been simply an incident in the evolution which it marked, and of which the benefit to the community has been immeasurably more important than the injury. The testimony given before the Industrial Commission simply confirms the deductions made by earlier studies of the progress of the nation. It indicates that not only are the numbers of the relatively comfortable classes constantly increasing, but also that among the working classes, the great mass of the people, the opportunities for acquiring good incomes by the industrious and highly skilled are growing rapidly. While the earning power of the unskilled laborer is increasing, that of the skilled workman is still more rapidly growing, and the combined use of hand and brain in specialized industries exhibits improvement at a rate greater than in any other field of productivity.

One of the highest statistical authorities in this country has recently written:

> There has been no debasement of humanity by the substitution of machinery for human labor, and there is no danger in such substitution. * * * It has been the means of reducing the workday from 12 hours to 9 or 10, and the inevitable result will be the still further reduction in the time necessary for the earning of a living. It has not only shortened the workday; it has also increased the remuneration per hour. It has rendered the return for the day's work in all the necessaries and the comforts of life vastly greater than in the earlier generations.[1]

ILLUSTRATIONS OF MECHANICAL PROGRESS.

The evidence regarding the wonderful development of methods of production in the United States is found abundantly on every hand. Indeed, it is difficult to select examples among the many illustrations of progress.

One significant indication of the inventiveness of the modern American is found in the statistics of patents granted. The total number of patents issued by the United States Government up to the end of 1900 was no less than 674,784, of which all but about 18,000 had been issued since 1852. From 1852 to 1859, inclusive, about 18,000 patents were issued. During the next decade the number exceeded 70,000. From 1870 to 1879, inclusive, 125,000 patents were issued, or an average of 12,500 yearly. During the next decade the average number of patents issued each year rose to nearly 20,000, while from 1890 to 1899, inclusive, 221,000 patents were issued. The most rapid increase in inventions, so far as these statistics go, appears to have been from 1865 to 1885, since which time the annual number of patents has not varied

[1] Wright's Outlines of Practical Sociology, p. 259.

greatly. The number of patents, however, is not altogether a correct measure of the progress of invention, and it is probable that the value of new inventions has been constantly rising from year to year.

The increased productiveness of American industry as the result of improved methods is abundantly evidenced by the statistics. The increase in output of nearly every article has exceeded the increase in population, and in many cases has been many times more rapid. Statistics of production in various industries have already been presented. A few items may be again referred to. The censuses show that from 1860 to 1890, while the population of the country doubled, the value of the products of all textile industries combined rose from $214,740,614 to $721,949,262, or multiplied three and one-half times. The production of pig iron, which becomes the basis of steel and of a multitude of highly elaborated iron and steel products, rose from 821,223 tons in 1860 to 13,789,242 tons in 1900, an increase of nearly 1,600 per cent. The proportion of pig iron turned into steel has increased with special rapidity, the production of steel multiplying more than eightfold between 1880 and 1899. The agricultural-implement makers of the United States annually distribute over the world nearly 200,000 self-binding harvesters, 250,000 mowing machines, 25,000 reapers, and 20,000 corn harvesters. A single establishment is said to build each year nearly a quarter of a million machines of these various classes. Many of the devices incorporated into these machines are peculiar to this country, purely American inventions, and in some cases, probably, they can not be successfully made by less acute and skillful mechanics abroad. Thus our skilled workingmen are helping on the solution of the problems of increasing the efficiency of the labor of the world and of minimizing wasted energy and product. By the use of these improved agricultural machines, greater and more uniform distribution of food, in that quantity which rich and poor alike need for their proper sustenance, has been promoted.

The locomotive is to-day built by the latest manufacturing methods. The production of its many parts in interchangeable units, the use of specially contrived machines for the various operations in making and finishing these details, and the introduction of the piecework system of compensating labor, combine to make its construction rapid, accurate, and cheap. The substitution of steel for iron has been one of the chief elements of progress. Thus the largest firm engaged in this business, by the employment of 9,000 men, produces 1,200 locomotives of all varieties each year, at a total market value of $16,000,000, or more, averaging about $13,500 each. The business demands a capital of $10,000,000, or $1,100 per man employed and $8,000 per engine turned out per annum. The capital under this modern system is thus "turned over" three times in two years, and the interest account is but about $33 per annum per locomotive produced. The

fact that these engines are sent to all parts of the world in competition, steadily and successfully, with the product of every other nation, notwithstanding the comparatively low cost of labor and of capital in other countries, shows that the perfection of American production provides not only the market for the products of capital but for the higher wages paid the workman. The perfection of American methods of constructing locomotives is exhibited by the fact that the size, speed, and efficiency of the product have been continually and very rapidly increasing. The 4 to 6 ton engine of the days of Stephenson has grown to 60, 80, and 100 tons or more in weight. The speed has risen from 15 or 20 to 50 or 60, in special cases 70 or 80, miles an hour, the record, indeed, being not less than 100 miles an hour. The cost of operation, as measured by the train-mile or ton-mile, permits transportation of merchandise for as little as a half cent per ton-mile and of passengers at the rate of 2 cents per mile and less.

ELEMENTS OF SUPERIORITY OF UNITED STATES.

The fundamental elements of efficiency in industrial production, in the United States as in any country, are perhaps summed up as—

1. The character of the people, as given form by race, environment, and especially by social and political influences.
2. The physical condition of the people, as determined by their food, their habits of life, and exercise.
3. The skill and efficiency of the people as tool users.
4. The quantity and productivity of tools, as determined by design and construction, and by combination of the man and the machine under all the preceding conditions.
5. The effective organization of business for economizing all productive and distributive forces.

Given a people of constitutional vigor and intelligence, with a talent for invention and construction, with political freedom and without social caste control, with a good system of education of mind and of hand, with abundance of wholesome food and a working day of proper length, with vocation and general opportunity free to all, and they will soon acquire tools and machinery, and skill in their use, and will promptly attain ability to promote their own elevation in maximum degree in minimum time. These conditions are probably at the moment illustrated in larger measure in the industrial system of the United States than in any other nation, though progress toward their fulfilment is rapid over all the civilized world.

While the system of the successful American manufacturer and his labor-assisting machinery are also largely available to his foreign competitor, and are, in fact, sometimes employed, the fundamental fact in the difference between our industry and that of other countries seems to be (as testified, for example, by Mr. Harrah, of the Midvale Steel

Works) the difference between men and the races of men. The conservatism of Great Britain and the comparative lack of ambition, and in some cases of education, in other European countries, and, above all, their lack of freedom, social as well as political, often prevents them from availing themselves of known and approved methods, tools, and machinery. The American manufacturer thus finds it possible in many branches of business to compete successfully abroad with all nationalities, despite their lower wages, and to build up at home the most advanced modern civilization.

It is possible, as more fully pointed out elsewhere, that the shorter and better-arranged work-day of this country may have much to do with the maintained energy, alertness, and ambition of the American workingman, and thus may be an important factor in his remarkable supremacy in productive power and in excellence of products. The effect of this productivity of American labor, and of the better conditions of life coming from lessened hours of labor and from larger returns, is illustrated in a very impressive manner by the growth of the people in size and in their improved physical proportions. The development of American women in height and in increased vitality is a matter of common remark. Such are vital and social gains through improved methods of industry and general employment of labor-assisting machinery.

IMPROVEMENTS IN ORGANIZATION OF INDUSTRY.

ADMINISTRATION OF INDUSTRIAL ESTABLISHMENTS.

The general administration of an industrial enterprise, whether of a single workshop, a manufacturing establishment consisting of an aggregation of workshops, or a system involving the united working of extensive interests and of many establishments, demands high skill, reliable judgment, and varied and complete experience on the part of the responsible officers. Even the management of the details of the work itself demands a mind of the most capable and efficient character. Increased skill in management has accompanied the industrial improvement of the last few decades in all directions, and has resulted in more effective division of labor and more complete specialization of work. In no other country has skill in the organization and administration of productive enterprises been so highly developed as in the United States. Our "captains of industry" are quick but sure in their judgments, self-reliant, and of boundless energy. They are less conservative than their competitors abroad, more ready to seize upon improved methods, and to incur risks where there is a fair chance of conspicuous success.

In any manufacturing business, management is an element which has most powerful influence upon the profit and safety with which

business is carried on. The financial and commercial departments of an industry require rare ability only from those at the head. On the other hand, in every grade of shop management, officers must be competent to utilize men and material to the very highest possible advantage, and must solve innumerable new problems of a practical nature every day. It is in this department of the manufacturing business that most can be effected by system and efficient methods. Many of our most successful managers have risen from the ranks of labor, and owe their skill almost wholly to their direct experience. Nevertheless, there is a growing recognition of the advantage which a good general and technical education may give in laying the foundations for industrial development. This advantage lends special interest to the subject of technical and commercial education, which is discussed elsewhere (page 581).

LARGE-SCALE PRODUCTION—THE FACTORY SYSTEM.

One of the most important factors in the progress of this country and of the civilized world during the nineteenth century, and especially in the tremendous acceleration in its later decades, has been the evolution of the system of large-scale production. Through modern organization of industry, labor power and machine power are conserved and rendered efficient in maximum degree; while every individual in the organization is given stimulus and opportunity to develop his own power to the utmost. Through it is made possible the utilization of all the products of the brains of inventors and mechanics, and thus they are stimulated to the highest possible achievement. In our own country, largely, if not mainly, through the influence upon the human mind and spirit of absolute freedom to develop, to work, and to aspire, systematic organization and effective administration of business and production have been more highly advanced than in any other. Political freedom has helped to bring into play every talent of every individual. Large-scale production and extensive systems of organization, with maximum efficiency and economy of capital, labor, and skill, have thus been rendered possible.

The "factory system" is to be considered as including, as essential: First, machinery, the most costly of all the elements of production; second, grouping of numbers of similar machines, or of diverse kinds of machinery, into a system within the factory; third, organization of the personnel and division of labor; fourth, adjustment of material and personal elements to the requirements of the market. All these features must be perfected before it can be asserted that the factory is adapted to its functions.

In many cases the organization of production has extended until it involves vastly more than the single factory; until it includes, in a unified system, many factories, and sometimes a great variety of indus-

tries, cooperating toward the production of a single ultimate product or class of related products. Thus a flouring mill organization may not only operate a number of separate mills, but may find important economies in the manufacture of its barrels and in the production of other cereal products besides flour. Again, a thoroughly equipped machine-building establishment often comprehends not only the machine shop, but also foundry, forge, and wood-working shops and brass-working departments. The economic advantages of production by combinations of establishments, as distinguished from single large factories, are more fully set forth in the chapter of this volume relating to Industrial Combinations.

It is necessary to highest efficiency that the organization of a great factory should be as complete and perfect as that of an army. It must be headed by a great executive officer, who must have precisely that number and character of subordinates, in all the various grades, which may be required to make his direction fruitful. Where the system involves the union of accessory establishments, or the combination of many plants of a similar character, the need of capable direction and of perfect organization to insure economical operation becomes still greater. The larger the army, the greater the general needed for its command.

There are doubtless some limits to the extent to which a single plant may be increased in size with advantage in production. In most classes of manufacture, however, production on a very large scale is, under modern conditions, essential to the greatest success. The larger and more varied in its output the factory becomes, the greater is the extent to which the production may be accommodated to the demands of the market, the easier it becomes to change to the particular class of product which may be most economically manufactured and most readily sold, and the more readily can the right men be fitted into precisely the right places in the management of the business. It has long been a recognized principle in the practical application of mechanical power that "the larger the scale on which productive power is applied, the more economical its application." The principle is illustrated alike in the employment of one hundred ton compound locomotives in hauling heavy trains, in the building of twenty and thirty thousand ton steamships for long ocean transportation, in the organization of the "department store," in the transcontinental railroad system with its numerous formerly independent links and laterals, and in the great factory with its many related processes and products.

Even farming has now come in many cases to be an organized system of production. This reduces the business to a branch of mechanical engineering, with all its important operations carried on by machinery, and brings down cost of production to the minimum. Machinery has long sowed, harvested, transported, and milled our

wheat; it is now being applied to the work of plowing, to the feeding and fattening of cattle, to the shearing of sheep, and to the reduction of cattle and sheep to the form of food and merchandise.

A conspicuous evidence of the tendency toward increasing size in manufacturing establishments is seen in the fact that, in many of the most prosperous and progressive industries, the number of active establishments has decreased during the past quarter of a century, notwithstanding the capital invested and the product have greatly increased. Thus, in 1880 there were 1,943 establishments engaged in the manufacture of agricultural implements, while in 1890 the number had fallen to less than half—910—though the capital had increased more than 125 per cent. In the first year the average capital per establishment was $31,966; ten years later it was $159,686. The figures for capital are confessedly uncertain, but the product also during this period increased more than 15 per cent and the number of employees nearly 10 per cent. The number of establishments engaged in the tanning and currying of leather in 1880 was reported to be 5,424. In 1900 the number had fallen to 1,306, although the value of the product was nearly five times greater in the latter year than in 1880. The number of shipbuilding plants reported in 1880 was 2,188 and the value of the output $36,800,327. In 1900 the number of plants had fallen to 1,083, while the value of the product had risen to $73,444,753. In practically every industry the decade from 1880 to 1890 witnessed an increase in capital employed, number of employees, and gross product, far greater than the increase in the number of establishments, while in a very considerable proportion of industries the absolute number of establishments decreased materially. (See also statistics on p. 493.)

Figures for the increase in the size of establishments manufacturing iron and steel, according to the census of 1900, are not yet available. They would doubtless show one of the most striking changes. From 1880 to 1890 the number of such establishments reporting decreased from 1,005 to 645, while the value of the product rose from $296,557,685 to $430,954,348. Yearly statistics of the iron and steel trade show the number of blast furnaces in operation, together with the output of pig iron. In 1880 there were 446 blast furnaces active, and the total production of pig iron was 3,835,191 tons. In 1900 the number of furnaces in blast was little more than half as great as in 1880—232—while the pig iron produced had increased more than three and one-half times, reaching 13,789,243 tons. As is well known, the number of separate plants actually operating blast furnaces, and manufacturing iron and steel, has decreased in still more marked ratio, while very many of these individual plants are owned by single great combinations.

The high development of the factory system has given to the United States a large degree of control of the market for many of the world's great staples. The continued introduction of improved methods and

machinery, the constant increase in the size of establishments and improvement in their organization, are steadily strengthening our position in the world's competition. The application of the old adage, "Large sales, small profits," has been a recognized element of success for many years among the wisest and most prosperous business men. It is the principle ruling the whole modern system of large-scale manufacturing. In this respect the United States is far ahead of foreign countries.

Large-scale production has been a powerful cause in bringing about a reduction of the hours of daily labor. The facilities which are secured by the highly organized factory make possible often the continuous operation of the plant night and day in three shifts, thus promoting the introduction of that ideal measure of working time, the 8-hour day. In the period during which the factory system has been in operation, the number of working hours has been reduced from 14, and even 16, to 10, and even in many cases to 9 or 8.

It is, of course, impossible to distinguish sharply between the results of large-scale production and those of improvements in machinery. Advance in either direction is dependent on advance in the other. The development of both together has not merely increased output immensely, but has also resulted in the production of better goods, of many classes, than could be made by hand labor. A comparison of a grating made by Brashear with the best work of a half century earlier, of the machine tool of our own with one of James Watt's time, of the machine-made watch of the end of the century with the hand-made timekeeper of its beginning, of the stationary or marine steam engine, of the locomotive, of the plow, even, with those of earlier days, will reveal the enormous advance in quality of workmanship brought about by these changes.

A comparison of the factory system with the older shop system, and the still older home-labor system of manufacture, where the comparison is practicable, shows that the result of this wonderful change of the nineteenth century has been not only to cheapen and make plenty all the comforts of life, but to improve the quality of labor, to give the worker more complete personal independence and to stimulate his ambition.

The change from the solitary workman in his cottage, or the family engaged in a common task at home, to the working of bodies of mechanics and operatives in the great shop or mill, and to the contemporary system of organized groups of factories, mills, or shops, has brought about already an immensely increased efficiency of labor. This tendency has in fact brought about a state of affairs, in the United States particularly, such as was never before seen. The leading men in many branches of industry are mainly of humble origin—men who began without friends or influence or capital or special advantage of any sort.

IMPROVEMENTS IN MOTIVE POWER.

Improvements in the forms and types of prime motors, and in the details of their construction, as well as in the methods of distributing available energy, have been no less essential and helpful than those which characterize the machinery directly used in productive arts. Whether in production or in transportation and distribution, motive power is the basis of all mechanical operations. The transfer and the transformation of the great stores of energy in nature for the use of mankind constitute fundamental elements of the change from ancient barbarism to contemporary advanced civilization.

The great improvements in motive power are substantially the product of the nineteenth century. At its beginning the people possessed neither wealth, knowledge, nor power, and such small amount of accumulated wealth as then existed was mainly held by a few and monopolized by nonproducers, especially landowners. The wealth of the community, so far as held by the people at large, has chiefly been produced and distributed since the days when Watt was perfecting the steam engine, toward the end of the eighteenth century, and when the inventors of modern mechanisms were making their first attempts to furnish the worker with labor-assisting machinery, whose successful operation was made possible by the steam engine. Curiously enough, Watt was improving the older form of steam engine at the same time when the gas engine was beginning to attract the attention of inventors, and when electricity was becoming recognized as a useful form of energy. At the same time, also, the great inventions in the textile industries were coming into view, and the whole system of modern industries was beginning to take on the shape now recognized as marvelously fruitful. For centuries the elements of applied science and of the modern arts had been germinating, concealed and unrecognized. At the commencement of the nineteenth century they began visibly to expand, and the long-dormant industrial system reached large fruition in a single century.

At the beginning of the nineteenth century the prime motors in our country were insignificant in aggregate power, and it was not until about 1830 that they began to assume sensible importance. At that time the estimated hand-work power of the people of this country, according to Mulhall, was not far from two thousand millions of foot-tons daily; the power of horses aggregated four times that amount, and the total, ten thousand millions, practically did the work of the country. At ten hours for the working day this corresponds to not far from a million horsepower, of which four-fifths was literal horsepower. Toward the close of the century the aggregate power of steam and horses and hand labor was, in round numbers, about one hundred and fifty thousand millions of foot-tons, equivalent to fifteen millions

of horsepower, of which, roughly, steam supplied eight millions, the horse six millions, and hand power one million. The statistician does not give the figures for other prime movers, but it is evident that the main source of power in a civilized country to-day is steam, and that this furnishes about one-half the total industrial energy of our nation. The improvements in motive power to date have been thus mainly in the introduction and extended use of the steam engine.

To-day the gas and the oil engines have found their way into common use, and are proving increasingly important competitors; while the range remaining for further improvement is so much greater than in the steam engine that many scientific men and engineers anticipate their final general substitution for the great heat motor of the nineteenth century.

THE STEAM ENGINE.

The improvements which, during a single century, have enabled the steam engine to take on the work of the world have been, like almost all great inventions, exceedingly simple; so much so, in fact, that, to the mechanic and engineer of our time, they appear merely perfectly obvious expedients for accomplishing a definite result. It is a common thing that an invention for which the world has long waited, and which no inventor has meantime been able to imagine or perfect, when once made and introduced, appears so simple and self-evident that, as sometimes phrased by the courts in patent cases, it is merely an obvious improvement, capable of production by any good mechanic and involving no invention. Such an invention was Watt's separate steam condenser, which converted the Newcomen engine into the so-called Watt engine; such was the steam jacket, another of that great inventor's devices; such was the conversion of the single-acting into the double-acting engine; and such was the conversion of the latter into the "rotative" engine, capable of turning a shaft and of supplying power to the mills and factories, the steamboats and the locomotives, of the whole industrial world. These and accessory inventions, such as the steam-engine governor and the indicator, the steam gauge for high pressures, and special forms of valve gearing—all simple and, after the fact, obvious improvements—have been the changes which have, in large measure, given the nineteenth century its industrial opportunity.[1]

Since the time of Watt the changes in the steam engine have been refinements rather than improvements by invention, and the only radical advances made in the construction of the world's motor have been the detachable cut-off gear of Sickles, the new type form of Corliss, and the evolution of the high-speed engine on the initiative of Porter. But even the minor refinements have effected a very great improve-

[1] History of the Growth of the Steam Engine; International Scientific Series, New York, D. Appleton & Co. 1900.

ment in the efficiency of the engine as a heat motor, in its concentration into comparatively small weight and volume, and in its adaptation to specific tasks, as in the locomotive and the steamship.

The outcome of improvements in the steam engine has been wholly beneficial to the world at large. Steam power has reenforced the human hand in such degree that it supplies civilized lands, at a moderate estimate, with the equivalent of four or five times the hand power of the whole working population of the globe, and applies that power through machinery with several times the efficiency and productiveness of the unaided hand. The steam engine came in at the beginning of the century as a recognized factor in the manufacturing industries. Soon afterwards it entered into the great field of transportation; the steamboat and the railroad began to be effective. By 1840 the steamship had begun to displace the sailing ship; in 1854 the compound engine came in to reduce costs of power on shipboard; in 1874 the triple-expansion engine showed its commercial superiority to the two-cylinder compound; and before the end of the nineteenth century the quadruple-expansion engine was coming into use as the standard long-route prime motor. Coal consumption, meantime, was reduced from about 5 or 6 pounds or more per horsepower hour, at the beginning of the century, to 3 pounds at the middle, and to 2 pounds or less at its end. The old sailing ship of a few hundred tons grew into the mammoth steamer of thousands of tons capacity, in some cases with more than 30,000 horsepower in a single vessel. The speed of ocean transportation has increased in nearly similar ratio, so that the time of crossing the Atlantic, formerly 30 to 40 days by the sailing "packets," became 10 days at the middle of the century, a week at the end of its third quarter, and 5½ days at its close.

The railroad, practically unknown to the world in 1800, entered into our transportation system at the end of the first quarter of the century, assumed a leading place by 1850, and to-day performs almost the whole work of land transportation. Costs of transportation by wagon, prohibitive for routes of more than a hundred miles in many parts of the country, became reduced by the railroad to a half cent per ton-mile, and thereby the great grain fields of the Northwest and the flouring mills of Minnesota furnish greatly cheapened bread to the population of the Atlantic coast.

Railroad and steamship cooperate in equalizing supply and demand and in the distribution of food, clothing, and all wealth throughout the world. Even China and India, and the interior of Asia and of Africa, are brought into touch with civilized lands, and famines and poverty are greatly ameliorated in the most distant provinces. The sewing machine and American petroleum are found to-day in the oases of Arabia and the deserts of Mongolia.

The progress of the steam engine in economical and commercial

aspects has been steady and rapid. The steam engine probably to-day approximates as closely to the ideal as does any device which the mind of the inventor has yet conceived. It has, in fact, approximated so closely to the perfect engine that its rival, the gas engine, has of late been rapidly overhauling it in the race for supremacy. The steam engine of to-day, in its most perfected condition, as a pumping engine—the original type—has attained a "duty" of 160,000,000 foot-pounds per hundred pounds of fuel consumed. The marine engine transfers a ton of merchandise a mile on the consumption of the fuel equivalent of "a single half-ounce letter," and affords the horsepower hour with the combustion of a pound of coal, or a little more. The great cotton mills obtain their motive power in some cases, even in New England, where fuel is costly, for between $10 and $12 per horsepower per year of 3,000 working hours. But the progress of the steam engine continues, and may be expected to continue slowly for a long time to come, with necessarily steady retardation of rate of gain until, in special cases, the ideal is very closely approached. In general the value of further gain in the efficiency of the steam engine will be found to be less than the outgo in attaining it, and the "golden mean" of the engineer, always his goal, will be commonly reached with a comparatively unperfected machine.

HYDRAULIC ENGINES.

Hydraulic engines find extensive and increasing application in all regions which are well supplied with water, having sufficient fall to permit the establishment of mill sites and of suitable reservoirs. The turbine has, as a rule, displaced every form of the older bucket wheel for low as well as high falls. The water-pressure engine is only used in special cases, and where the head employed is produced artificially and is measured by hundreds of feet and many atmospheres of pressure. This is rather a form of apparatus especially adapted for energy transmission than one suitable for utilizing natural heads of water. In the mountainous districts, however, and especially in mining sections, torrential streams are reduced to service by installing special forms of turbine suitable for heads of hundreds of feet, and through them intercepting the energy of the streams and transmitting it, often over scores of miles, by electric wires to mines and mills, at which it proves very much more economical as a source of power than steam engines, since usually in such localities the use of fuel means serious expense.

For moderate falls the older type of turbine of Boyden and his successors in the United States, of Fourneyron and others in Europe, but commonly a turbine of the inward-flow type, maintains its ground, and the greater part of the hydraulic power of the country is derived from these motors. The efficiency attained by any good type of tur-

bine, well designed and properly adjusted to its head, is now expected to be at least 80 per cent, whereas in the days of the pioneers 70 to 75 per cent were considered good average figures. To-day, indeed, with exactly proportioned turbines under high falls, efficiencies approximating 90 per cent are probably attained.

The electric current for transmitting power is proving an enormously valuable recent accession to the use of water as a prime mover. The combination of the modern turbine with electric transmission is now permitting the utilization of hydraulic power much more extensively than ever before, and is enabling the engineer to use falls which, far away from any point at which employment of their power is commercially practicable, must otherwise have remained useless. The Niagara Falls plants, the Massena water power, and many others illustrate this recent change in the utilization of hydraulic power in our country, and many such instances may also be observed abroad. In the aggregate, hundreds of thousands of horsepower will unquestionably soon be added to the available power of the country by this system. As capital becomes more and more available with falling interest rates, the principal obstacle to the construction of extensive plants, the high first cost of this kind of construction, will become less and less serious, and it may fairly be expected that, long before the rising costs of our gradually disappearing stocks of fuel shall have seriously embarrassed our industries, a very large part of our immense, and now comparatively useless, stores of hydraulic energy may be rendered available for industrial purposes.

PNEUMATIC MOTORS.

The pneumatic motors (the windmills) continue to find limited employment, where the irregularity of the available energy of the winds does not constitute a fatal objection to their use. Thus they are commonly used in the pumping of water for the purposes of the farm. They have come to perform a much larger aggregate work than in earlier generations; but, relatively, they have fallen behind and assume a less important part than might perhaps have been anticipated. Yet the wind blows, on the average, at the rate of 8 miles an hour throughout the year. It is capable of doing work with the windmill at all moderate speeds above this average, and in the course of the year may supply a very large and valuable amount of energy, especially where, as in pumping, for example, the irregularity of the work is a matter of comparative unimportance. According to Wolff, the most careful and complete student of the problem, the windmill does its work, on the average, at about one-half the expense of the steam pump, and one-half to one-third the cost of the hot air and the gas engine.[1]

[1]The Windmill as Prime Mover; A. R. Wolff. New York, D. Van Nostrand Co., 1885.

The improvements effected in the construction of the windmill have been very great, and it has become a very efficient instrument. The modern type is usually made of iron or steel with correctly shaped vanes, adjusted to the proper angle and set for the average wind velocity of the locality, mounted upon a strong and stiff iron or steel tower, and fitted with an efficient system of regulation and a convenient apparatus for putting it on and off duty or for protecting it from excessively high winds. In some localities, however, the risks of injury by gales are so great as to limit the use of windmills. Thus, for the water-tank supply of railroads situated on extensive plains, where in winter the winds are high and liable to be destructive, windmills have proved unreliable.

The makers of these motors are, however, constantly enlarging their markets and finding wider use for their product and new employments in previously unoccupied fields. The use of the windmill for storage of energy is particularly a growing field, whether in storing water in flat countries, for power or for irrigation, in distributing the available energy of the rainy season over many months; in sending the energy of a well-watered district miles away to mines or mills in sections of the country in which power is not obtainable as desired; or, in its later use, the storage of electrical energy in the "accumulator," to be utilized for power and light throughout the hours of calm. As regards quality, number, size, efficiency, and economy of manufacture, there may be observed a steady progress in pneumatic motors, through the application of more special talent to their design and of modern systems of manufacture.

ELECTRIC CURRENTS.

Electric currents are not to be classed with the motors, and are not, in the industries, a source of power. Electricity is as yet nowhere a practically available primary energy. When a method is discovered of deriving this energy directly from the latent energy of fuel, it will, if commercially profitable, find enormous opportunities for displacing the existing forms of motors. To-day, like the shafting of mills or the wire-rope transmission, employed extensively in long-distance distributions of power, electricity is simply an extension of the strong arm of the steam engine or other prime mover. Wherever it is found doing work, some other source will be discovered behind it from which it derives its initial power. It is at present always an accessory, though an extremely useful and often indispensable accessory, of the prime mover, which is almost always either the steam engine or the hydraulic turbine, though the windmill will presumably find more or less extensive additional employment through its partnership with electric distribution.

High-tension electricity is now profitably used in a great variety

of forms of long-distance transmission, and its range of employment is constantly increasing. The Niagara Falls system is distributing the current of energy, transmitted through turbines, generators, lines, and motors, over a range of 20 miles or more, and has a capacity for considerably increased range with profit. Numerous transmissions in mining districts of the West supply current from sources on mountain streams scores of miles from points of utilization, and the steady extension of the limit of profitable utilization by increasing voltage continues. It is not long since it was troublesome to handle a current of 1,000 volts; recently 5,000 to 10,000 volts became the limit; but electrical engineers are now able to control 20,000 and 30,000 volts on long lines, and, under favorable conditions and with suitable construction, twice these tensions. The commercial distance limit of employment is now in excess of one hundred miles, and the efficiency of transmission, and consequently the range, constantly increase with improvement in insulation.

The magnitude of the stream of energy transmitted is increasing as well as its tension, and 5,000 horsepower has long been a perfectly practicable size of dynamo-electric machine. There is no reason, as a matter of engineering, why a multiple of this size should not be constructed with entire success, should it be called for in any business enterprise in preference to smaller sizes. There is no physical limit, practically, to the quantity of energy which can be transmitted, where the costs of the system are not such as to forbid its use.

IMPROVEMENTS IN MACHINERY.

Improvements in machinery of all kinds have been the most characteristic element of expansion in the productive industries as well as in those of transportation. By such improvements the enormous increase in available energy through the development of prime motors is made directly applicable to the work of the world. Every art has been given its special forms of labor-assisting machinery, and in some arts, as in agriculture, a whole system of machinery has been invented and applied to their peculiar needs during the past century.

The introduction of the labor-assisting inventions, particularly of the last century, has placed in the hands of every class of workers mechanism which increases the power and productivity of the hand many fold. It is largely this increase in the productive power of the human hand which has so enormously increased the wealth of the people. The worker receives more for the day's work than formerly because his day's work is worth more, and produces multiplied wealth. The more labor-assisting machinery and a perfect manufacturing system are utilized, and the further the worker departs from the old shop and home work methods, the shorter the workday becomes, the greater the independence of the worker, and the more highly cultured the average man, woman, and child.

ILLUSTRATIONS OF IMPROVEMENTS IN MACHINERY.

The effectiveness of machinery in promoting production and accumulation of wealth is well illustrated by the history of agriculture in recent years. A certain amount of grain and other food is required to provide muscular and brain power; the less the cost of this provision and the less its wastes, the more can human energy and intelligence be turned toward the production of permanent wealth and higher forms of enjoyment. The crops of the United States could not to-day be harvested by available manual labor. It is said that the one invention of the self-binding reaper reduced the cost of wheat production 6 to 10 per cent. This is one of the ways in which the purchasing power of the average daily wage has been increased so greatly.

The elaborate investigation of the Department of Labor, regarding the relative merits of hand and machine labor, published in 1898, shows clearly the remarkable saving of human labor which has been effected by agricultural machinery. Thus, in one typical instance of wheat production in 1830, it was found that it required 192.8 minutes of human labor to produce a bushel of wheat. The plowing in this case was done by oxen; the seeding, cutting, thrashing, and winnowing by hand. In 1896 it was found possible, in one instance investigated, to produce a bushel of wheat on the average with the expenditure of 8.9 minutes of human labor, by the use of steam gang plows, machine seeders and harrows, and steam reapers and thrashers. Even without the use of steam power in agricultural production, modern machine methods reduce the labor time greatly. Thus, in another instance which is cited, the human labor required in 1896 was only 10 minutes per bushel without steam power. In the production of corn, machine methods can not replace hand labor so completely as in the case of wheat, but nevertheless great improvements have been made. In 1855 it required 274 minutes of human labor to raise a bushel of corn, while in 1894 only 41.3 minutes were necessary. It is true that the illustrations of modern methods of production are selected ones, representing highly advanced agriculture, but even the great body of American farmers have enormously increased their productive capacity by means of improved machinery.

The improvements in the manufacture of shoes, as the result of machine methods, have been very striking. Little more than half a century ago, practically all shoes were made by hand labor. To-day, many different classes of automatic machines are employed for performing the numerous processes into which the manufacture is divided. The first radical change came in 1860, when the McKay sewing machine for sewing soles to the uppers of shoes was invented. Later on, the Goodyear turn and welt sewing machines were introduced, which made possible such fine work that only an expert can discern the difference between the hand-sewed and machine-sewed product. In

one instance it has been shown by the Department of Labor that the pegging of the soles to the uppers and insoles of 100 pairs of shoes required 25 hours by hand, while by the aid of the McKay machine the same number of soles were sewed on in 1 hour and 38 minutes. The sewing of the same shoes by hand would require 98 hours, a ratio of 60 to 1 in favor of the machine. A striking feature of machine methods in the boot and shoe industry is the extreme subdivision of labor which has followed, so that a very large number of different persons are employed upon a single article. The number of distinct processes mentioned in the manufacture of men's brogan shoes is no less than 84. Taking the aggregate time of all the employees engaged in making 100 pairs of such shoes by machine methods, it is found that 62 hours and 4.6 minutes of human labor were expended in a typical instance in 1895, as compared with 283 hours and 20 minutes for making the same number by hand methods in 1855, a ratio of nearly 5 to 1 in favor of machinery. In the manufacture of women's cheap kid shoes the ratio of production per unit of labor by machine methods as compared with hand methods is stated at 13 to 1.

The result of these remarkable improvements in the production of shoes is seen in the fact that American shoes are recognized the world over as of superior quality, and are being exported even to the most advanced countries of Europe. Notwithstanding the great decrease in cost of production, the improvement in the quality and the increase in the purchasing power of the people have been so great that the people demand many more shoes, so that the total value of the production per capita is even greater to-day than it was forty years ago. The aggregate value of the output of shoes, including both factory and custom work, rose from $91,889,298 in 1860 to $255,180,698 in 1890. The number of persons employed in the industry accordingly has increased considerably, while the average wages are materially higher than they were before the introduction of machinery.

The introduction of power machinery into the manufacture of textile products dates much further back than in the case of boots and shoes. It is difficult to measure the enormous increase in productivity which has resulted from the application of steam power and from the improvements in the machines used, many of which are of comparatively recent date. There are several distinct processes in the manufacture of textile goods, practically all of which are now performed by most highly perfected machinery. One of the most striking advances has been in the process of weaving. The investigation of the Department of Labor shows that, under the primitive method of foot-power looms, in one typical instance it required 480 hours to weave 500 yards of cotton sheeting, while the same amount was produced in 16 hours 35.1 minutes by modern methods in 1897. This shows a ratio of 29 to 1 in favor of the modern method. The aggre-

gate labor time required in the entire process of producing these 500 yards of sheeting from the cotton bale under the hand method was 5,605 hours, while the total time required by the machine method was 52 hours 45.6 minutes, or a ratio of 106 to 1 in favor of machinery. In several other typical instances an almost equal saving in time by machine methods was shown. Improvements in machinery have likewise resulted in a finer quality of product than was possible under the older methods. The variety of different textile articles placed upon the market has become very great.

Even within the past thirty years there have been great improvements in machinery for the manufacture of cotton. Since 1870 spindles have been so improved as to make possible double the production of cotton yarn with the same labor and substantially the same power. It is stated that spindles at present are capable of practically unlimited speed. Quite recently the Northrup loom has been put on the market, which is so perfect in its automatic arrangements that one weaver can run from 16 to 20 looms, whereas before its introduction, with the best existing machinery, one man could operate only 6 or 8 looms. Some American machinery for cotton manufacture is more advanced than that in any other country. In Italy, it is stated by witnesses, a weaver ordinarily operates only 1 or 2 looms, in England only from 2 to 4. Looms of American pattern are being copied in foreign countries, and to some extent looms are being exported from the United States. On account of its lower cost a considerable amount of English cotton machinery is still imported into the United States, but it is very generally believed that most American machinery is superior and will more and more displace that from abroad.

Another marked improvement in the textile industry has been in the machinery for printing cotton goods. Thirty years ago, it is stated, machinery could produce patterns of one color only, while to-day many machines will print from 8 to 14 colors with one revolution of the rollers. The quality of dyes used has been greatly improved also. Representatives of the American cotton industry assert that American printed cottons are equal to those made anywhere, and that generally the texture and the finish of American cotton goods are equal to those of any European product.

The advantages of mechanical improvements in this industry are seen in the great cheapening of all classes of textile products. At the same time a much larger quantity of textiles is consumed than forty or fifty years ago, even the poorer people demanding far larger quantities and far better and more varied kinds of goods. The fact that the value of textiles produced multiplied by more than three and one-half times from 1860 to 1890 has already been referred to. The number of employees engaged in these industries has accordingly greatly increased, being more than two and one-half times as large in 1890 as in 1860.

One of the most wonderful of all illustrations of improvements in mechanical production is found in printing. The typesetting machine, which dates from only ten or fifteen years ago, is now used in practically all large newspaper offices, and, with improvements in the quality of work, promises to be employed largely in even the finer grades of printing. By means of these machines a single skilled man can set more than four times as much type in a given time as by hand labor. Much more striking, however, is the increased efficiency of modern printing presses as compared with the old hand presses. The quadruple newspaper press can turn out 10,000 copies of a 16-page paper, printed on both sides and folded, in about 32 minutes; with the hand press of good pattern an edition of 10,000 copies of a 16-page paper would require 320 hours; the last copies of a 10,000 edition would not reach the readers until more than thirteen days after the first paper left the press. Of course the great quadruple press requires more persons to tend it than the hand press. The aggregate amount of labor time required for printing 10,000 16-page papers in the instance above cited was 4 hours and 39 minutes, while the aggregate amount of labor time with the hand press would be 760 hours, or 163 times as much.

By these modern improvements the effectiveness of the printing industry, as measured by the output per worker, has been increased twenty, thirty, or even, in some cases, one hundred fold. The result has been a great cheapening in cost, which has made it possible for people of every class to obtain books and periodicals. The daily newspaper, with its mine of information, may be purchased at little more than a nominal cost, and even the poorest citizen reads from it the progress of a world. While there has been a temporary displacement of labor in some instances by these improvements, the demand for printed material has been so vastly increased by its cheapening that the total number of employees engaged in the printing industry has steadily risen. The market to-day accepts millions of sheets where, a century ago, thousands only of papers or books would have been required.

Perhaps the most remarkable saving in human labor, as the result of mechanical improvements, is found in the manufacture of small articles, especially of metal, now made by means of automatic machinery, but which formerly required hand tools. The manufacture of screws is a case in point. Under modern methods from 6 to 12 automatic screw machines may be operated by a single person. In one instance, reported by the Department of Labor, 10,000 screw posts were made by the use of screw machines with 16.7 minutes of human labor, whereas, when such screws were made by hand tools, 1,250 hours were required for the same output. In other words, in this case machines have increased the efficiency of hand labor 4,491 times.

Adam Smith's famous illustration of the improvement in pin making, published more than a century ago, may be continued to-day with no less striking and convincing value in exhibition of the effect of further improvement in machinery of production, and in systematization of the industry. It was originally stated by the great economist that it would require the untrained and unaided workman a full day to make a single acceptable pin; while the trade at the time had been so systematized through division of labor and use of tools that the production had come to be about 5,000 pins per day per workman. A hundred years later a single automatic machine was producing 1,000,000 pins and more per day, and the workman was so far aided by his machine that his production per day had become about 15,000,000 pins, complete and stuck in the familiar papers ready for the market.

GENERAL SOCIAL EFFECTS OF IMPROVED MACHINERY.

Illustrations such as these might readily be multiplied. In each industry we should find a course of progress more or less parallel, with results in general similar. The improvements in machinery have everywhere increased production, cheapened cost, and in almost all instances have improved quality as well. By these means they have increased the wealth of the world. Greater production has meant the possibility of greater consumption, of more and better satisfaction of the needs of the people. Even of staple commodities the consumption has been increased by reduction in cost and improvement in quality. At the same time the saving in labor power necessary for the production of articles already in common use has made possible the production of many new classes of goods and the extension of the range of human enjoyments.

Thus the new industries which have been organized consequent upon the discoveries in the field of electricity, such as the telegraph, the telephone, and the great chemical industries based upon that new system of utilization of energy, now employ immense numbers of people, at the same time promoting the comfort, safety, and welfare of the people. Again, the railroad employs many times the number of people formerly required by the stage-coach; while, as some one has said, there are probably now demanded even a much larger number of horses merely for transporting people to and from the trains, than were a century ago employed in the whole stage-coach business.

The new values imparted to products by elaboration through machine methods are further evidence of the progress of the people. Cotton costing a few cents per pound is converted into fine cloths worth dollars. One dollar's worth of iron ore becomes worth five times as much in bar iron, ten times as much in ordinary forged "uses," hundreds of dollars in cutlery, thousands in fine needles, and hundreds of

thousands in watch springs. Every multiple is a correct measure of the increased value of the product to the community, and of the enriching power of invention and of scientific and systematic industry.

Even in an industry so purely chemical as sugar manufacture, the inventions and mechanical improvements of recent years, and the progress effected in method and in organization and administration, have brought down costs and market prices greatly. The same class of sugar is quoted in the files of the brokers at 5 cents twenty-five years ago, 3 cents ten years later, and 2 cents at later dates. Beet sugar, formerly obtained from a stated quantity of root in the proportion of 6 to 8 per cent, is now often made in as high a ratio as 10 to 14 per cent.

In every department of productive industry the same general causes have been fruitful in the reduction of costs. Reduction of costs usually brings about a reduction of prices and an increase in amount and reliability of compensation of the producers. Every reduction of prices extends the market, often in much more than commensurate degree. Each extension of the market, by enlarging the scale of production, affords an opportunity still further to reduce costs and prices and to increase wages. This reciprocation goes on constantly, though there is usually a gradual reduction of the rapidity of the progress, which tends to approach a limit for the time and place; a limit, however, that is slowly extended with the passage of time. Here and there also the limit of improvement in production of one article is reached through improvement in methods of producing a rival commodity, so that, as in the case of iron, outranked by steel in the manufacture of rails, the least desirable article disappears from the market.

Whatever the aspect in which the evolutionary and often revolutionary changes in machinery during the last century are viewed, the conclusion is certain that they have given more and steadier employment to the people, that they have immensely cheapened and multiplied the production of the world, and, perhaps in no less proportion, have rendered the product more useful to the people of every class. The displacement of here and there a section of the workers has been immensely more than counterbalanced by the ultimate gains. While it is true that to return to the older system, or lack of system, of employing labor, would mean the demand, if present production were to be maintained, for several times as many workers as are now engaged, it is also true that such a demand could not be supplied. Without machinery the whole population of the world, working industriously and continuously, even 14 or 16 hours a day, could produce wealth at but a small fraction of the rate at which it is accumulated at present. In such case the world would have to fall back to the industrial condition of the days of our grandparents.

As already pointed out, improvements in machinery, like other improvements in methods of production, have often resulted in temporary hardship to certain classes of employers, and more especially to certain classes of workingmen. In the long run, however, the increased consumption of goods, which the cheapening of production has made possible, has absorbed the labor displaced, while, with the increased productiveness of the individual, increase in wages has followed. On the whole and in the long run, the workingmen have been vastly benefited by improved machinery.

Every decade, since the days of Smeaton and Watt and Arkwright and Hargreaves, has seen marvelous advances in invention and mechanism. But the radical industrial changes of the nineteenth century and the crises and crashes which, at intervals of 10 to 20 years, have been their accompaniment, are likely to be less severe in the future. Civilization and the industries are established upon a new basis, and progress hereafter will probably be smoother, although equally rapid; precisely as the rough progress of the railway train of 1840 has been gradually transformed into the swift and steady, almost insensible, motion of the modern express train, making its 50 to 60 miles an hour and covering a thousand miles "between sun and sun." On our railways must be expected an occasional delay or accident, but the safety of life and limb and property on the fastest railway journey is vastly greater than in stage coaching in the first quarter of the last century. So the prosperity of the average citizen has continually and rapidly improved through the whole period of transformation from the home and hand labor of early days to the factory and machine production of our own time, and the hardships caused to individuals and classes in some cases by sudden changes have been less than those which the entire community suffered before modern methods of production were introduced.

Probably the most rapid change in the methods of industry observable at any time in history began in the United States after the close of our civil war of 1861–1865. In the following third of a century the most trying of the changes from the old to the new system of production were experienced. In some directions the transformation was catastrophic. The rapidity of change, giving too little time for ready accommodation to the new conditions, resulted in suffering and disturbance to many employers and workingmen alike. These were the "growing pains" of the industrial system. They simply presaged growth, vigor, and multiplied fruitfulness. Various authorities cited by Mr. David A. Wells, in his Recent Economic Changes, published in 1889, show that the productiveness of labor in the industries was multiplied, on the average, not less than three or four times, and in some departments many fold, in the brief period from 1865 to 1889. In fact, the changes and the progress since 1865

have been greater in many directions than during the whole history of the world before. It may be hoped that no such radical reconstruction of the industrial system, resulting in such serious and troublesome transfers of workers from old into novel surroundings, and causing so much disturbance and trial, will ever again occur.

The following propositions are obviously true:

1. The more completely the laboring population of the world, and that smaller population engaged in combining brain and muscle in production, are kept employed, the wealthier the world and the more rapid its advance, provided wastes are kept down to a minimum.

2. The smaller the number of nonproducers among adults, the larger is the production, the more efficient the population as wealth producers, and the more rapid its progress in wealth production and accumulation.

3. The more generally and effectively the manual labor of the world is aided and directed by brain, the higher is its efficiency.

4. The more generally machinery, and especially automatic machinery, can be made to reenforce producers and distributers of wealth, the higher is the efficiency of wealth production.

It is still further evident that, after the worker has attained a certain degree of efficiency, further increase in productive power can only be had by the use of machinery to reenforce that maximum power of the unaided hand. We have reached such a point in this progress, in the most advanced countries, that it is now chiefly through improvement of machinery and its more effective use that a more rapid accumulation of wealth can be secured. In fact, as is shown by the history of nations, no important accumulation of wealth in the hands of the people ever occurred until after the introduction of machinery, mainly during the nineteenth century. The characteristic features of modern civilization come from the introduction and use of machinery; to return to the ancient systems of production would be to return to ancient barbarism and poverty. Every improvement in machinery results ultimately in further advancement of the people.

OTHER ELEMENTS OF MECHANICAL PROGRESS.

NEW PRODUCTS AND NEW USES OF BY-PRODUCTS.

Modern invention has brought into use innumerable new products, and the same genius for discovering the unknown and unsuspected has led to extensive utilization of formerly wasted by-products of the industries, often to the extent of making the former by-product the principal and most profitable output of an industrial process.

In the testimony presented before the Industrial Commission many instances have been given of this increased use of new products and of by-products in the progress of modern industry. While observed in the most striking manner among the chemical manufactures, such

advances are illustrated in many other departments of industry. The development of the use of aluminum, which is of comparatively recent date, is a case in point. The tendency everywhere is to find ways of utilizing rejected substances or scraps of material. Out of the residuum from the refining of petroleum a hundred valuable products are now manufactured. Cotton seed, once chiefly wasted, is made to produce a highly useful and valuable oil. Even the utilization of tin scrap, one of the most perplexing problems of earlier days, is now comparatively well solved. The change from iron to steel has been that from a weldable but practically nonfusible substance to one which may be freely and fully melted and fused into a mass, however varied the character of the scrap. The reemployment of old iron which can be dissolved into the new steel mixture, or of worn-out or rejected steel of all qualities by converting it into new products, is a most important economy. Again, the employment of scrap platinum is a matter of great and increasing necessity. The demand for platinum grows rapidly, while the supply remains limited; the price is constantly rising, and has long been so high as to forbid the use of the metal for many important purposes. The ready fusion of platinum by the electric current and the electric furnace makes its scrap and many wastes available for reworking without serious expense.

These illustrations are paralleled in all departments of industry as the outcome of modern methods and inventions. Both the introduction of new products and the utilization of by-products and of wastes are direct contributions to the world's wealth.

INTERCHANGEABLE PARTS.

The adoption of the factory system and of machine methods of production, with their accuracy, has led to great economy and convenience by making possible the manufacture of articles in interchangeable parts.

The convenience to the workman who assembles or to the user of any mechanism, which comes from having each piece capable of replacement by or interchange with any other of the same design and dimensions, is almost as important as the economy of having each piece made by a specially adapted machine and as one of many. With interchangeable parts any one piece may be placed in the machine or tool or vehicle in process of assemblage as well as any other of its kind, and the assemblage of a whole is thus carried on irrespective of the individuality of its parts. In this way also repairs can be made quickly and easily, even a thousand miles from the place of manufacture. But this can be done only when exact form and dimensions can be secured, accurate to the practical limit of the proposed fit, which may be and often is necessarily within the forty-thousandth of an inch—about the limit of perception by touch of a good mechanic accus-

tomed to fine work. This feature of modern methods of manufacture involves and compels improved machinery and improved workmanship, while it makes possible an improved quality of product at less cost by far than the comparatively crude work of earlier days.

It is largely through the system of interchangeable parts that a watch which was formerly bought in Geneva or Liverpool at a cost of from $100 upward, or a chronometer which cost several hundred dollars as made by the older hand-work system, may now be bought at a fraction of the old price. A recently made timekeeper of much finer design and vastly better finish than the handmade movement of 1850 can be bought for $25. Fine watch cases of gold plated upon cheaper metals—"filled cases,"—quite as handsome and practically as durable as those of solid gold, may be had for a small fraction of the cost of the older styles. It is thus, too, that fine sporting guns or military or sporting rifles, formerly costing as much as good Geneva or Liverpool watches, may now be produced for a greatly reduced price—in the case of the army rifle for about $10—though they are of much finer workmanship and better materials than their predecessors of the days of hand work. Similarly, to make a sewing machine would have cost $100 or more in the earlier period, while it costs but about $10 to make one to-day.

NEW ARCHITECTURE—STEEL CONSTRUCTION.

In architecture, as in agriculture, manufactures, and every other department of production, a new system has come in with recent years. The advent of improved and cheaper methods of producing metallic building materials is a comparatively new thing. The contemporary steel construction of large and especially of lofty buildings, of bridges, and of otherwise difficult and costly structures, like domes and roofs of large extent, has become commercially possible only through the improvements which have been effected in the manufacture of structural steel. Iron is no longer known in such constructions; it has disappeared from the specifications of the architect almost as completely as from those of the engineer of railways. The figures of the production of structural steel are a measure of the magnitude and importance of this recent innovation.

So important is this change that the relative falling off of the production of rails with the close of the period of rapid extension of our railroad system has been fully compensated by the growth of this demand for structural steel. Its influence upon the architecture of the day has been very great, in permitting not only the building of lofty structures, but also fireproof construction of great perfection and efficiency. The utility of this advance has a larger measure than simply that of reducing costs of insurance and losses of the insurer—it means a great progress in the preservation of wealth, in the permanence of otherwise perishable property.

Steel construction also, like all improvement in industrial fields, by affording a means of securing a better building, promotes a demand for increasing numbers and better kinds of buildings, and for added capacity in such structures, and this in turn provides more profitable employment to increasing numbers of the better classes of workmen.

Without this improvement in the materials of construction and resulting progress in methods of construction, the fifteen, twenty, or even thirty story buildings of New York and Chicago, Boston and Philadelphia, could not have been economically erected, if at all. Such buildings are superior to those of masonry in capacity per unit of volume of materials employed, in providing especially much larger space on the lower floors where space is most valuable, in affording better opportunity to secure satisfactory heating, lighting, and elevator arrangements, in giving maximum strength with minimum weight. The modern methods afford opportunity to design a structure which has inherent strength and stability, unity, and even elasticity, together with uniformity and continuity of its elements. Joints may be made as strong and tough as the beams and columns which they unite, and the whole cage-like framing may be made capable of safely resisting external forces even powerful enough to seriously distort it, as well as of being protected against fire with entire security.

The structural steel of the market has a tenacity of from 60,000 to 70,000 pounds per square inch, while the iron which it has displaced had but about 45,000 pounds. The specifications of architects provide for careful testing of quality in order that the computations of the designer may be fully justified, and the construction made as safe as anticipated. By the use of this material as a framing, and filling in with "hollow" brick, it is now commercially practicable to carry up buildings to a height of 400 or 500 feet, while it is quite easy, as a matter of architectural engineering, to match the Eiffel tower and pile a thousand feet of construction with fifty stories of fireproof architecture upon any good foundation. The cost of large buildings of this later type varies, with the amount of work in foundations and nature of the soil, with height, and with the extent to which refinements of construction and decoration are introduced, from 25 to 50 cents per cubic foot, occasionally reaching 60 or 70 cents. From 1,000 to 2,000 tons of steel are often used in modern tall buildings, while several of the largest contain 4,000 tons or more. The new Government Printing Office at Washington, which is built with special strength to carry heavy floor weights, will contain over 6,300 tons of steel, and it is estimated that the Appraisers' Warehouse in New York will contain about 10,000 tons. This steel can now be furnished, thanks to modern invention, at a less cost than the weaker and less reliable metal which it has superseded. Where the values of land have become so high as in the great cities, in consequence of the fact that enormous business can be done more advantageously in limited space, the values are now

still further enhanced by this new device of construction, and the conversion of buildings into towers is becoming usual in such locations.

The adoption of steel construction and of standard sections and sizes has reduced the older systems of bridge construction to a branch of mechanical engineering. The largest bridges are now turned out at short notice as the product of a system of manufacturing involving a similar method in general to that previously made standard in gun making. It is through this adaptation of a modern material and modern method, whole-heartedly, by American bridge manufacturers that they have been able, despite higher costs in labor and material, to compete successfully with all foreign nations, and to supply the largest bridges under the most exacting specifications and contracts, delivering them in India, Africa, and Australia at lower costs to the purchaser and in vastly shorter time than could be guaranteed by their competitors. The structural material is bought in standard sizes and delivered at a very low cost at the bridge works; it is given such comparatively small alteration of form as is necessary; it is drilled and spliced by special machines, largely automatic, and is assembled to standard forms of aggregation with the same accuracy of workmanship and certainty of precise fit as are demanded in machine construction. It is transported to its destination, by rail and by sea, at costs which, a generation earlier, would not have carried it one-fifth the distance. Finally, it is erected by a small force of workmen, reenforced by powerful and handy machinery for hoisting and carrying, and thus takes shape on its piers in a marvelously short time. Standard shapes in structural steel are important elements of this admirable progress in bridge construction. The same statement is in large degree true of the wire-rope suspension bridge of the New York and Brooklyn type.

The great Forth bridge in Scotland cost $13,000,000, the Brooklyn bridge $5,600,000, and the Poughkeepsie bridge over the Hudson $2,600,000. Their lengths are 5,400, 3,700, and 3,100 feet. By ancient methods, even with modern material, they would certainly have cost at least three times as much, even could they have been built at all.

EXPERIMENT AND SCIENTIFIC RESEARCH.

Scientific methods of investigation and research for the determination of the nature and action of the laws of the universe, and especially of those physical laws controlling the energies of nature, the utilization of which by man has been necessary to modern progress, have throughout the past century been among the most fruitful elements of advance in every department of the useful arts. The establishment of the scientific method has proved immensely helpful in every field of invention and of production. In fact, to-day the designer

and the engineer have largely superseded the inventor of the older time. In every industry, once a problem is propounded or a need recognized and defined, scientific investigation is made promptly to reveal the fundamental law of the case, and the scientifically educated designer or engineer at once develops the form and proportions of the mechanism required for its solution. The rule-of-thumb ways, the haphazard methods of the inventors of older times, have been mainly replaced by scientific, direct, and exact methods of design.

Original scientific research cooperates with experimental investigation of the efficiency of the mechanism tentatively adopted in furtherance of a specified purpose. The former reveals the general laws operating. Experiment determines just how far the engineer and the mechanic, the inventor and the builder, have succeeded in constructing a new apparatus in accordance with those laws; measures its excellencies and its defects, revealing their causes and indicating the right way toward further improvement and perfection.

Prof. R. H. Thurston, one of the highest authorities on applied science, has said on this point:

> Every modern industry has a foundation in applied science. Art has ceased to be empirical, and all arts have become systematic and scientific. Chemistry gives us to-day a revivified soil, selects for us the most remunerative crop for the location, soil, and climate, determines for us the best food for the plant and the most appropriate method of cultivation; entomology teaches us the habits of the useful and the harmless insects, shows us how to save a million dollars in a year among the fruit trees of western New York, and how to battle with the hosts of the army worm and the locust; botany gives us new edibles and teaches us to cultivate them; mechanical science supplies the agriculturist with his mower and reaper, his binder and thrashing machine, his gang drill and steam plow, transports his harvest to a transoceanic market, and gives the laborer in New England flour from a mill in the Northwest at lower cost than if made at his own door, minimizing and evening the costs of existence to all the world. The chemist gives us an artificial madder and changes the course of trade in a great staple, benefiting thousands; the physicist provides us with a science of electricity and gives to the engineer control of a form of energy which distributes power from waterfall or steam engine over miles of railway, or to a thousand arc lights, or to an industrial center beyond mountains and valleys, or to widely separated nuclei of manufactures and trade.
>
> The progress of the century past has been largely due to the fact that every modern industry has come to be underlain, as we have seen, by a scientific foundation; the laws of nature are made the basis of every act of every worker, every operation is carried through a sequence of movements of man or machinery or both, dictated by natural law and human reason, and the construction of mechanism derived wholly through scientific method. Agriculture has a science which is a composite of chemistry, botany, and entomology; mining and metallurgy find a foundation in the sciences of chemistry, geology, mineralogy, and thermal physics; architecture builds on geology and applied mechanics and the fine arts; the textile manufacture depends on the sciences underlying the production of cotton, the breeding of sheep, and the cultivation of the silkworm; the construction of machinery is a problem in the mathematics of applied mechanics, and the heat engines derive their powers from the forces of nature through application of thermodynamics, physics, and chemistry. All civilization depends on the thermodynamic machine for physical

power; all races derive their life and energies from agriculture, and spiritual life profits by the wealth of learning, mainly in the domain of science, which the successors of Aristotle have distributed to the world while depending on accumulated wealth for their sustenance meantime. The science of life, the science of wealth, the science of industry are each essential to the perfection of human life. All are parts of one pantology, the perfecting and completing of which is the task of the century. Learning is worth more than any mine; one genius, trained and cultured, outvalues a multitude; one statesman, one industrial commander; one great exploiter of scientific knowledge counts for an army, for he makes effective an army, saves a country from ruin, raises a nation to previously unimagined heights, confers the comforts of the highest civilization on the people, or gives his fellowmen leadership toward hitherto unexplored realms of wisdom, knowledge, and opportunity. The grandest financial expenditures by the State are those which develop moral, intellectual, and physical forces for the benefit of the nation.

Three remarkable developments of the present century, all the outcome of great social processes of evolution in various departments of our later civilization, have compelled the attention of students of history and of sociology in these later days; illustrating the fact that all modern progress has been made by advances of continuously increasing importance. The rate of progression under the action of the mighty forces which have become so sensible, in these decades which have seen substantially all the grandest movements of humanity, like that of a stone falling under action of gravitation, has been in each of these directions an acceleration. These three most wonderful accelerations have been (1) the progress of invention and of the mechanic arts; (2) the evolution of modern physical sciences; (3) the advancement of systematic methods of cultivation of the mind. Progress in the mechanic arts and engineering, scientific discovery, and the construction of the sciences, and that form of intellectual training which we call education have thus constituted the most important characteristics of the progress of the century.

A conspicuous element in the application of science to industry is the cooperation between different investigators and engineers, by which the results gained by one are rapidly made available throughout the field of industry. Some industries, to be sure, are based on patents or on secret processes, but in large measure the fraternal spirit of investigators leads them, through scientific and industrial associations and publications, to aid one another in extending as widely as possible the advantages of new methods and discoveries.

III. INTERNAL TRADE AND COMMERCE.

GENERAL TENDENCIES.

The tremendous increase in the production of the country in agricultural and mineral products, and especially in manufactures, has been accompanied by a still more marked increase in the amount of internal traffic. As is more fully pointed out in the discussion of Transportation, the increase in the volume of goods moved from one place to another has been even more rapid than that in the amount of goods produced. It is a natural result of developing industry and civilization that the people are served with products of greater and greater variety and brought from longer and longer distances. This develop-

ment has a powerful effect upon the conditions of the producer, and of the middleman who handles the goods on their way to the consumer.

A specially significant feature of the increase in production and in means of transportation has been the widening of markets. In early years products were largely consumed near the point of their production. To-day in many industries the producers in widely separated sections of the country, and in widely separated countries themselves, compete with one another in many markets. Many manufacturers whose establishments are located in a single State, for instance, find sale for their goods in almost every State of the Union. Manufacturers have therefore a very different problem to face in the disposal of their goods from that which confronted the establishment with a localized market. Prices have been made more uniform throughout the country, and the styles of goods and their quality likewise have been brought more nearly to a single standard. In many cases the widening of the area of competition has increased its intensity. The more or less monopolistic control of particular local markets, which was formerly enjoyed by many manufacturers, has largely disappeared. As is more fully pointed out in connection with the discussion of Industrial Combinations, one of the results of this widening of the field of competition has been the tendency toward the combination of separate establishments, in order to rid themselves of too sharp competition, as well as to save in freight rates by avoiding cross shipments as much as possible. The widening of competition has also made more important the relations between employers and employees, and the securing of approximately uniform conditions as regards cost of production. The desirability of greater uniformity in labor legislation from this standpoint is discussed more fully elsewhere. (See pages 787, 900.)

CONDITION OF WHOLESALE AND RETAIL BUSINESS.

Increase in the production of goods is not necessarily accompanied by a corresponding increase in the prosperity of wholesale and retail trade. Some classes of goods are sold only to large consumers, and to a considerable extent go directly from the producer to them. Changes in business methods may tend, and doubtless during recent years have tended, to increase the proportion of the product which is thus sold without the intermediary service of independent dealers. Many other conditions of trade and commerce may change independently of the general state of productive industry. On the whole, however, there can be no question that wholesale and retail business has shared largely in the general advance in prosperity which has characterized the past three or four years. Accurate information regarding internal trade of this sort is exceedingly difficult to obtain. Statistics are almost wholly wanting, and the interests of different

classes of middlemen differ so greatly that a clear view of conditions can scarcely be gained from their testimony.

One thing is made clear by the investigation of the Commission. The importance of the middleman between the producer and the retail dealer is diminishing, and in some instances retail dealers themselves are being displaced by the practice of direct selling by manufacturers. In the days when manufacturing establishments were for the most part small and when retail stores were likewise small, it was almost out of the question for the manufacturer and the retailer to deal directly with one another. The manufacturer would have had to incur an expense which would be enormous in proportion to the value of his goods, if he sought to bring them to the notice of scattered small retail dealers. Most classes of manufactured products were therefore handled by jobbers or commission men. The jobber bought goods outright from the manufacturer, assuming the risk of sale as well as enjoying a considerable part of the profit coming from fluctuations in the market. The commission dealer acted rather as an agent of the producer, receiving a percentage upon the sales which he effected.

At present there seems to be a very marked decline in the jobbing business and, to a less extent, a decline also in the commission business. The latter suffers less, because under modern methods goods ordered through a commission broker can be shipped directly from the producer to the retailer or consumer, without the expense of rehandling and double freighting, which is usually incurred in the jobbing business. Both classes of middlemen are, however, to a considerable extent being displaced. The increase in the size of manufacturing establishments makes it possible for many producers to maintain regular selling departments, the expense of which is distributed over so large a business as to become less than that of employing middlemen. In some cases manufacturers are selling, to a considerable extent, directly to small consumers without even the aid of retail dealers. Sale direct from the factory, often by delivery on approval, is increasingly common, while not a few large manufacturers maintain retail stores in various cities.

The practice of making direct sales to retailers or consumers has been especially common in the case of the great industrial combinations. The Standard Oil Company long ago adopted the system in most of its markets. The Pittsburg Plate Glass Company, which has a large control of the plate-glass business in this country, has established distributing branches which have tended largely to drive out the jobbers. It is asserted by the officers of the company in this case that their action was forced by the dictatorial conduct of the jobbers, who had a national association and endeavored to dictate to the manufacturers to what jobbers they should sell. In other cases the elimination of the jobber is merely a matter of evolution, of simplification.

One witness, however, who has had large experience in wholesale business, as well as in the management of various industrial combinations, points out that producers must exercise great care in endeavoring to economize by doing away with middlemen. Some kinds of business permit this method of selling more readily than others. Especially where goods are sold on the basis of popular trade-marks and brands, the method of direct sales to retailers is likely to prove advantageous.

Another powerful influence which has tended to reduce the importance of the wholesale dealer has been the great increase in the size of retail establishments in many cases. Department stores buy goods of many classes, often in exceedingly large quantities, in some cases purchasing the entire output of mills. Moreover, many stores dealing in special classes of articles have so developed that their purchases are on a scale much larger than before. These large retailers, therefore, tend more and more to deal directly with manufacturers, in fact often ordering in advance of actual production the particular styles which they desire. This latter practice relieves the manufacturer of risk, minimizing the time between the production and the consumption of goods. The large retail dealer knows, at least so it is claimed by the representatives of department stores, more accurately than the jobber just what the wants of consumers are, and the danger of producing unsalable commodities is therefore reduced by this change in the methods of business.

It is very generally asserted that the consumer benefits largely by the increased directness of the process by which goods are brought to him from the manufacturer. The elimination of the middleman is an elimination of expense. This same tendency to eliminate the middleman is seen in the handling of agricultural products as well as of manufactured commodities, and it is probable that a saving to the entire community has been effected.

Accurate information regarding the extent to which middlemen have already been displaced can not be secured. One witness asserts that the number of dry-goods jobbing houses in New York a few years ago was twenty-eight, and that they have now been reduced to four, which, while larger than the average of the former establishments, do much less total business than they did. A similar condition obtains in the Boston dry-goods business. Again, it is said that the larger part of the cotton goods produced in New Bedford is sold directly to retailers, although commission houses still do a large business in cottons produced in New England.

DEPARTMENT STORES.

Somewhat in advance of the movement toward consolidation on the part of producers came the concentration of retail business in large

stores. The department store, which is really a consolidation of smaller stores handling different lines of goods, dates back to the period immediately following the civil war, and seems to be due to the changes in the methods of conducting business which developed about that time. Prices were falling, the margin of profit was growing smaller, and it became necessary for merchants to turn over their stocks rapidly. They thus needed larger capital and new sales methods.

While, from the nature of things, there can not be such concentration in retail trade as in production or in wholesale trade, and while for that reason department stores have not multiplied with the same remarkable rapidity as have industrial combinations, there nevertheless seems to be a constant movement toward the concentration of retail trade, and department stores are to be found in all parts of the country.

A feature connected with the establishment of such stores, which has been the subject of more or less complaint, has been the introduction of mail-order departments, by means of which customers living at a distance, who are unable to avail themselves in person of the advantages of the department stores, with their large and varied stocks, are enabled to make purchases by mail.

There can be no doubt that the establishment of the mail-order system tends to decrease the sales of the local dealer, and that he has reason to view its growth with a certain degree of apprehension. Manifestly, there must be somewhat narrow limits to the growth of the system, since in the case of a very large majority of the lines of goods carried by department stores, satisfactory purchases are possible only after personal inspection of the goods. In so far as the mail-order system exists, however, it must exist because the people in the small towns can not be served so satisfactorily by their home stores as they can be by the department stores in the large cities. The first consideration is doubtless the greatest good to the greatest number, and if customers find the mail-order system of advantage there is every reason for its continuance. It is claimed by some of the department stores that the mail-order branch is maintained merely for the purpose of accommodating outside customers, and that it is, on the whole, not a source of profit to the store.

There seems to be no doubt that the department stores are tending to eliminate the jobbers, and are, to a considerable extent at least, crowding out the small retail dealers. There are apparently few instances in which the department store has destroyed the business of the retailers by unfairly lowering prices, only to raise them again when a monopoly has been secured. In the smaller towns or cities, where but one department store is to be found, the crowding out of the small retailers might result in monopoly on the part of the department store. In the larger cities, where several department stores are

to be found in competition with each other, there can be no element of monopoly in the business, and the success of the department store must be attributed to the fact that the public finds it more to its advantage to trade at the large stores than at the smaller stores. The department store, with the large capital at its command and with the large purchases it must necessarily make at one time, is no doubt able to buy goods at lower prices than the small dealers. Furthermore, if rightly managed, the department store must be able to make great economies in rent, cost of superintendence, office expenses, and, possibly, in clerk hire. If these advantages are shared with the public, the result must of necessity be lower prices and consequent benefit. In the absence of monopoly, which in general seems to be the situation to-day, the establishment of department stores must be regarded as being on the whole advantageous to the consuming public.

It is perhaps not so easy to determine what has been their effect upon labor. The representatives of the department stores and of the small stores appear to hold antipodal opinions on this point. The representatives of the department stores, on the one hand, claim that the establishment of the large stores has resulted in the reduction of prices, has thereby stimulated consumption, and therefore increased employment, both in the manufacture of goods and in their distribution, and that more than the total number of competent persons thrown out of employment in the small stores by the competition of department stores are given employment in the department stores themselves. They assert further that wages are also higher and hours of labor fewer in the department stores than in the small stores; that an employee in a large department store may easily hold a more important position than if working for himself; and that employees, instead of having their individuality destroyed by employment in the department store, frequently identify themselves with the interests of the concern and take pride in the establishment.[1] The small dealers, on the other hand, claim that fewer people are now employed and that wages have been very much reduced through the establishment of department stores.[2] There has not been sufficient statistical investigation to make it possible to determine the comparative value of these conflicting opinions in respect to the effect of the department stores on employment and on wages.

Some department stores may be guilty of fraudulent advertising, but this does not seem to be an inherent quality of the department store, but to depend rather on the character of the men in charge, and is to be found in connection with the small stores as well as with the large stores.

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[1] Reports Industrial Commission, Vol. VII, pp. 453, 461–463, 699, 700.

[2] Ibid., p. 735.

IV.—FOREIGN COMMERCE.

EXPORT TRADE.

The enormous increase in the export trade of the United States, and in the balance of trade in favor of this country, has already been set forth by statistics in connection with that part of the report dealing with the Progress of the Nation. It was seen that the total exports of the United States (including both domestic and foreign goods) had increased from $392,771,768 in 1870 to $1,487,755,557 in 1901, and that even during the single decade from 1890 to 1901 our exports showed an increase of more than $600,000,000, or upward of 75 per cent. It is important to notice that this increase in export trade, especially during the past decade, has been most marked in regard to manufactures—highly elaborated products. The movement of the different broad groups of domestic exports is shown in the following table:

Values of domestic merchandise, grouped according to sources of production, exported during selected years.

Year ending June 30—	Exports of domestic merchandise other than manufactures.[1]							
	Agriculture.		Mining.		Forest.		Fisheries.	
	Values.	Per ct.	Values.	Per ct.	Values.	Per ct.	Values.	Per ct.
1860	$256,560,972	81.13	$999,465	0.31	$10,299,959	3.26	$4,156,480	1.31
1870	361,188,483	79.35	5,026,111	1.10	14,897,963	3.27	2,835,508	.62
1880	685,961,091	83.25	5,863,232	.71	17,321,268	2.11	5,255,402	.64
1885	530,172,966	72.96	15,797,885	2.18	22,014,819	3.03	5,955,122	.82
1890	629,820,808	74.51	22,297,755	2.64	29,473,084	3.49	7,458,385	.88
1895	553,210,026	69.73	18,509,814	2.33	2,576,235	3.61	5,328,807	.67
1900	835,858,123	60.98	37,843,742	2.76	52,218,112	3.81	6,326,620	.46
1901	944,059,568	64.64	39,267,647	2.69	54,312,820	3.72	7,743,313	.53

Year ending June 30—	Exports of domestic merchandise other than manufactures.[1]				Exports of domestic manufactures.		Total exports of domestic merchandise.
	Miscellaneous.		Total.				
	Values.	Per ct.	Values.	Per ct.	Values.	Per ct.	Values.
1860	$3,879,655	1.23	$275,896,531	87.24	$40,345,892	12.76	$316,242,423
1870	2,980,512	.66	386,928,577	85	68,279,764	15	455,208,341
1880	6,089,345	.81	721,090,338	87.52	102,856,015	12.48	823,946,353
1885	5,554,607	.76	579,495,419	79.75	147,187,527	20.25	726,682,946
1890	5,141,420	.61	694,191,452	82.13	151,102,376	17.87	845,293,828
1895	4,171,974	.52	609,796,856	76.86	183,595,743	23.14	793,392,599
1900	4,665,218	.34	936,911,815	68.35	433,851,756	31.65	1,370,763,571
1901	4,561,278	.31	1,049,944,636	71.89	410,509,173	28.11	1,460,453,809

[1] The figures in this table for 1870 are in paper currency, and about 15 per cent greater than those compared above in the text, based on specie value, but the relative percentages of the respective classes in the total exports for 1870 are not vitiated by the difference in basis.

From this table it will be seen that by far the greatest proportion of our exports is still agricultural products, of which we sent abroad nearly $950,000,000 worth in 1901. The increase in our agricultural exports has been very great, much greater than the increase in population. They were more than two and three-fourths times greater in 1901 than in 1870. Similarly, there has been a great increase in our

exports of the products of mines and forests, the exports of mineral products especially (gold and silver being omitted) having multiplied by nearly eightfold since 1870. Especially significant, however, is the increase in the exports of domestic manufactures, and this increase has been far more rapid during the past five or six years than at any previous time. While the exports of all classes of products aside from manufactures were nearly two and three-fourths times as great in 1901 as in 1870, the exports of domestic manufactures were more than six times greater in the latter year than in the former.

The exports of domestic manufactures for 1890 were $151,102,376. They increased comparatively slowly up to 1895, when they amounted to $183,595,743. By 1900 the exports of domestic manufactures had risen to the unprecedented figure of $433,851,756, while in 1901 the exportation of such articles was almost as great, the apparent falling off being largely due to the fact that the trade with Porto Rico and Hawaii is no longer included, those islands having become domestic territory. The increase in exports of manufactures from 1890 to 1900 was 187 per cent.

The increasing importance of our exportation of mineral products and of manufactures as compared with other articles may be conspicuously seen in another way. In 1870, 79.35 per cent of all our exports were agricultural products, and in 1880 the proportion of agricultural exports was even larger. By 1890 such exports had fallen to 74.57 per cent of the total, while in 1900 only a little over three-fifths of the exports of the country (60.98 per cent) were agricultural products. On the other hand, the products of the mines, which were 1.1 per cent of our total exports in 1870, rose to 2.76 per cent in 1900, while the exports of domestic manufactures, which were only 15 per cent of our total exports in 1870 and only 12.48 per cent in 1880, rose to 31.65 per cent in 1900, and in 1901 were 28.11 per cent.

EXPORTS BY GROUPS OF PRODUCTS.

The development of our export trade in particular classes of agricultural and manufactured products is shown in greater detail in the following table:

Domestic merchandise exported by groups of articles, 1870–1901.[1]

Year ending June 30—	Agricultural implements.	Animals.	Breadstuffs.	Coal.	Cotton and manufactures of.	Iron and steel and manufactures of.
1870	$1,068,476	$1,045,039	$72,250,983	$1,306,358	$230,814,906	$13,483,193
1880	2,245,742	15,882,120	286,764,807	2,058,080	222,003,556	14,716,524
1890	3,859,184	33,638,128	154,925,927	6,856,088	260,968,069	25,542,208
1895	5,413,075	35,754,045	114,604,780	11,098,627	218,690,800	32,000,989
1900	16,099,149	43,585,031	262,744,078	19,502,813	265,835,824	121,992,590
1901	16,313,434	52,058,876	275,594,618	22,317,496	333,945,861	117,495,087

[1] Compiled from Foreign Commerce and Navigation of the United States, 1900, Vol. I, p. 26, and Monthly Summary of Commerce and Finance, June, 1901, pp. 3140 foll.

Domestic merchandise exported by groups of articles, 1870–1901—Continued.

Year.	Leather and manufactures of.	Mineral oils.	Provisions.	Tobacco and manufactures of.	Wood and manufactures of.
1870	$673,331	$32,666,349	$30,245,516	$22,705,225	$13,734,838
1880	6,760,186	36,218,625	129,887,277	18,442,273	16,237,376
1890	12,438,847	51,403,089	136,264,506	25,355,601	28,274,529
1895	15,614,407	46,660,082	135,216,270	29,752,123	27,115,907
1900	27,293,010	75,611,750	184,453,065	35,432,512	50,598,416
1901	29,923,653	71,112,788	196,958,878	32,749,078	52,442,684

Comparing the years 1870 and 1901, separated by three decades, the value of exports of agricultural implements rose from $1,068,476 to $16,313,434, iron and steel from $13,483,193 to $117,495,087, provisions from $30,245,516 to $196,958,878. Live stock showed an increase from $1,045,039 to $52,058,876, breadstuffs from $72,250,933 to $275,594,618. Coal, leather, oil, tobacco, and wood also show a great increase. The most marked increase is found in agricultural implements, iron, and steel, live stock, and leather. The breadstuffs, provisions, tobacco, oil, and cotton show a smaller increase.

Comparing the years 1890 and 1901 the greatest increase is seen in agricultural implements and products of iron and steel. The value of agricultural implements exported in 1890 was $3,859,184, and in 1901 it was $16,313,434, an increase of about 320 per cent. For iron and steel there was an increase from $25,542,208 to $117,495,087, or 360 per cent.

During this decade, exports of coal and leather also much more than doubled, but none of the other groups showed such a large increase. In the case of cotton and breadstuffs, crop conditions in America, as well as the demand in Europe for the articles, largely determine the volume of exports. Thus, in 1890 the value of breadstuffs exported was $154,925,927, but the next year the value had risen to $299,363,117, a larger volume of exports than for the year 1901.[1] Cotton, in like manner, was exported to the value of $260,968,069 in 1890 and to the value of $304,317,755 in 1891, while exports to the value of $265,835,824 in 1900 were followed by exports of $333,945,861 in 1901, thus showing how largely crop conditions influence the export of these staples.

Among the articles enumerated in the above table, agricultural implements fall wholly within the class of manufactures, while practically all of our exports of iron and steel are manufactured articles, only a few hundred thousand dollars' worth of iron ore being exported. More than nine-tenths of our exports of mineral oils are the refined product, which is classed as a manufactured article. The increase in

[1] Statistical Abstract, 1900, p. 188.

the exportation of refined oil in recent years has been somewhat less rapid than in the case of iron and steel and various other manufactured articles, but this is explainable by the fact that American petroleum has, for many years, been a necessary article of consumption in a large part of the world. Other products, not covered by the above table, which show a rapid increase in exportation, are chemicals, drugs, and dyes, the exports of which increased from $5,424,279 in 1890, to $14,384,448, in 1901; paper and manufactures thereof, of which the United States exported $1,226,686 in 1890, and $7,439,001 in 1901, and instruments for scientific purposes (including telegraphs, telephones, and other electric instruments), which increased from $1,429,785 in 1890 to $7,361,231, in 1901.

The great increase in exports, then, has been not only of the raw and unmanufactured articles, but even more of the manufactured articles. In order to distinguish the exports of the raw and finished products of cotton, leather, tobacco, and wood, the following table has been compiled for certain years only:

Domestic merchandise exported, selected raw articles and manufactures of the same during the years 1880, 1891, 1895, 1901.

	1880.	1891.	1895.	1901.
Cotton, raw	$211,585,905	$290,712,898	$204,900,990	$313,673,443
Manufactures of	9,961,418	13,604,857	13,789,810	20,272,418
Leather	5,744,360	12,023,445	13,640,553	21,320,926
Manufactures of	1,015,826	1,255,402	2,973,854	6,603,007
Tobacco	16,379,107	21,083,759	25,798,968	27,656,475
Manufactures of	2,063,166	4,186,713	3,953,165	5,092,603
Wood	12,251,682	20,283,318	19,866,100	41,345,642
Manufactures of	3,975,694	5,986,722	6,249,807	11,097,042

From this table it will be seen that the exports of these four classes of manufactured articles have increased more rapidly than those of the raw material. Especially is this noticeable in contrasting the exports of raw cotton with manufactures of cotton. In this case the exports of the raw product show fluctuations determined largely by the condition of the crop. But the manufactures of cotton show a steady increase from 1880 to 1901, and in that time have more than doubled; whereas the increase in exports of raw cotton had been only about 14 per cent, comparing 1880 with 1900, although they increased 48 per cent, comparing 1880 with 1901.

RELATIVE IMPORTANCE OF EXPORT PRODUCTS.

In considering the exports of domestic merchandise there is great significance in arranging them in the order of their importance.

Domestic exports arranged in the order of their importance, 1901.

[Monthly Summary of Commerce and Finance, June, 1901, pp. 3140 et seq.]

Total domestic exports		$1,460,453,809
Cotton		333,945,861
Raw	$313,673,443	
Manufactures of	20,272,418	
Breadstuffs		275,594,618
Corn	82,527,983	
Wheat	96,771,743	
Wheat flour	69,459,296	
Oats	11,765,330	
Provisions		196,558,878
Lard	46,560,148	
Bacon	37,499,026	
Beef, fresh	31,851,361	
Ham	22,842,778	
Pork	9,926,633	
Beef, canned	5,307,501	
Cheese	3,950,999	
Iron and steel		117,319,270
Machinery	46,987,160	
Builders' hardware	9,204,513	
Rails, steel	10,841,189	
Wire	4,104,563	
Structural	3,357,023	
Oil		90,148,469
Mineral	71,112,788	
Illuminating	51,477,267	
Lubricating	10,006,937	
Vegetable	19,035,681	
Wood		52,442,684
Animals		52,058,876
Cattle	37,566,980	
Horses	8,873,845	
Mules	3,210,267	
Copper		44,613,728
Ore	1,346,707	
Manufactures of	43,267,021	
Leather		27,923,653
Uppers	11,341,610	
Sole leather	6,577,732	
Coal		22,317,496
Anthracite	8,425,808	
Bituminous	13,891,698	
Agricultural implements		16,313,434
Chemicals		14,384,448

In this way it appears that, out of a total volume of domestic exports amounting to $1,460,453,809, cotton and cotton manufactures were the largest group of exports, followed by breadstuffs; then, in the order named, provisions, iron and steel products, oil, copper, wood, animals, leather, coal, agricultural implements, chemicals, etc. As to the exports of individual articles, raw cotton is the first in importance, followed by wheat, corn, mineral oil, wheat flour, and machinery.

PROPORTION OF PRODUCT EXPORTED.

Aside from this method of showing the absolute exports of the several articles, it is of more interest to know what part of the domestic product is thus exported. The exports of an article may be large and they may continue to increase, but at the same time the domestic product may be very large and production may steadily be on the increase. In order, then, to see the movement of export in its relation to the domestic product, it is necessary to take the volume exported and compare it with the volume produced. There is a difficulty in comparing directly the values of the exports and the values of the product, because the value of exports is the value at the place of

export, including the cost of transportation, while the value of the product is given as at the place where it was produced. This exaggerates the importance of the export trade by giving a percentage of product exported greater than would have appeared, were it possible to compare the two on the same basis of prices. This is especially true in the case of breadstuffs and other farm products and minerals.

The accompanying table is intended to show approximately, for a few selected articles, the percentage of the domestic product exported for the years 1880, 1890, 1895, and 1900.

Proportion of domestic product of certain leading articles exported.[1]

Articles of domestic export.	Percentage of product exported.			
	1880.	1890.	1895.	1900.
Cotton	65.73	68.15	69.83	65.18
Wheat and wheat flour	40.18	22.31	31.46	34
Corn and corn meal	6.43	4.85	2.36	10.30
Wool	.08	.08	1.38	.76
Coal:				
Anthracite	1.53	1.91	2.84	3.24
Bituminous	.58	1.29	1.83	3.29
Petroleum	61.17	58.09	50.76	45.13
Pig iron	.05	.24	.34	1.18
Steel rails	.10	.67	1.19	15.30

[1] Compiled and computed from tables of production and export in Statistical Abstract of the United States, 1900.

Here the article first in importance as an export in proportion to its product is cotton. The proportion of product exported reached its highest point in 1895, with 69.83 per cent, and its lowest in 1900, with 65.18 per cent. After this comes petroleum, of which 45.13 per cent was exported in 1900, as compared with 61.17 per cent in 1880. Wheat from this table shows a fluctuation from 40.18 per cent in 1880 and 22.31 per cent in 1890 to 34 per cent in 1900.

Corn, on the other hand, shows only 6.43 per cent exported in 1880 and 10.30 per cent in 1900. From this table, in which the volume of production is taken into account, it is seen that only 10.30 per cent of the corn produced was exported, whereas 34 per cent of the wheat product was exported; yet the value of the wheat and wheat flour exported was only about twice that of the corn exports.

The increase in the proportion of exports is also shown by the table. It is important to notice that the increase comes not in the agricultural products, but in the mineral and manufactured articles. The most notable increases have been in the manufactures of iron and steel. Wheat shows an actual falling off in the proportion exported since 1880, but corn shows an increase in 1900 over 1880 on the basis of volume of production.

In the case of coal the increase has been not only rapid, but also regular. In 1880, 1.5 per cent of the anthracite and 0.58 per cent of the bituminous coal mined were exported. In 1890 the percentage

exported had risen for anthracite to 1.91; bituminous, 1.14. The year 1895 also showed an increase, and in 1900, though a very large product was mined, 3.6 per cent of the anthracite and 2.7 per cent of the bituminous were exported.

Exports of iron, steel, and the products of iron and steel, increased as follows: In the value of machinery there was an increase from 2.89 per cent in 1880 to 3.37 per cent in 1890, which will doubtless be doubled when we have the new census figures for production. Comparing the two earlier censuses, before the great increase in the exports of these articles, we find that 4.2 per cent of the value of builders' hardware was exported in 1880 and 14.4 per cent in 1890, a three and a half fold increase. During the same time the proportion of sewing-machine exports almost doubled, rising from 11.9 per cent of the value of the domestic product in 1880 to 21.8 per cent in 1890. Pig iron and bar iron and the articles of steel show the greatest increase from 1890 to 1900, which would probably be paralleled in the case of machinery if the value of the products in 1900 were to be had. Exports of steel rails show the largest per cent of increase, being 0.03 of 1 per cent of the product in 1880, 0.5 of 1 per cent in 1890, 0.68 of 1 per cent in 1895, and 11.5 per cent in 1900, showing an increase in the last ten years to twenty-three times the per cent exported in 1890.

IMPORT TRADE.

The fact has already been pointed out that the imports of the United States have shown no such remarkable increase as exports, but have, in fact, fallen off since 1891. From 1870 to 1891 there was a more or less steady increase in our total importations. They stood at $426,346,010 in the former year, and reached a maximum of $854,519,577 in 1891. Imports fell off quite markedly in 1894, and the recovery of business in 1898 and 1899 was, so far from being accompanied by an increase of import trade, attended by a considerable decrease. In 1900, however, the imports to the United States were very much greater than in 1899, the total imports entered for consumption in 1900 being $830,519,252, a sum somewhat greater than the imports of 1901. As elsewhere indicated (p. 498), the undervaluation of goods in increasing degree probably accounts in part for the decline in importations during the last decade.

It is significant, also, that the imports of manufactured articles ready for consumption have fallen off since 1890 and 1891 to a considerably greater degree than the total imports. The following table shows the imports into the United States at five-year intervals from 1885 to 1900, together with the corresponding figures for 1901, classified broadly according to the degree of manufacture and use:

Total values of imported merchandise, by groups, according to degree of manufacture and uses.

	1885.		1890.	
	Dollars.	Per ct.	Dollars.	Per ct.
Class A: Food and live animals	194,266,360	33.51	248,600,646	32.13
Class B: Crude articles for domestic industries	119,609,342	20.63	178,435,512	23.06
Class C: Manufactured articles for use as materials in mechanic arts	72,456,952	12.50	84,700,568	10.94
Class D: Articles manufactured ready for consumption	119,027,569	20.53	154,469,354	19.96
Class E: Articles of voluntary use, luxuries, etc	74,219,831	12.80	107,468,732	13.19
Total	579,580,054	100	773,674,812	100

	1895.		1900.		1901.	
	Dollars.	Per ct.	Dollars.	Per ct.	Dollars.	Per ct.
Class A: Food and live animals	226,422,171	30.97	216,107,308	26.02	222,227,898	27.02
Class B: Crude articles for domestic industries	187,482,743	25.64	299,351,033	36.04	269,763,404	32.79
Class C: Manufactured articles for use as materials in mechanic arts	83,768,478	11.46	80,575,042	9.70	79,080,716	9.61
Class D: Articles manufactured ready for consumption	140,773,811	19.25	130,577,155	15.72	130,662,903	15.88
Class E: Articles of voluntary use, luxuries, etc	92,714,887	12.68	103,908,719	12.51	120,938,095	14.70
Total	731,162,090	100	830,519,252	100	822,673,016	100

From this table it will be seen that the imports of food products to the United States were less, both absolutely and relatively to other classes, in 1900 and 1901 than in 1890. In 1901 these articles constituted 27.02 per cent of the total imports as compared with 32.02 per cent in 1890. The four most important articles coming under this group are sugar and molasses, coffee, fruits and nuts, and tea.

Especially conspicuous has been the recent increase in the importation of crude articles which become the basis of domestic manufactures. While our imports of such articles were only 23.06 per cent of our total importations in 1890, in 1900 they had risen to 36.04 per cent, the absolute amount in the latter year being $299,351,033, or over $120,000,000 more than in 1890. This increase is significant in conjunction with the enormous increase in our production and exportation of manufactured articles. In the table on the next page the more important articles falling under this class are enumerated. On the other hand, there has been a slight decrease in the importation of articles partly manufactured for use as materials in the mechanic arts and domestic manufactures. We imported goods of this class to the value of $84,700,568 in 1890, and to the value of only $79,080,716 in 1901. The chief articles coming under this head are chemicals of various sorts, tin plates, leather, silk, and wood.

Our imports of manufactured articles ready for consumption were more than 15 per cent less in absolute amount in 1901 than in 1890, having fallen from $154,469,354 to $130,662,903. In the earlier year manufactured articles constituted 19.96 per cent of our imports, while in 1901 they were only 15.88 per cent of the total. The imports of the fifth great class, "articles of voluntary use, luxuries, etc."—consisting

chiefly of precious stones, jewelry, silks, laces, tobacco, and liquors—have increased somewhat in amount during the past decade. Most of these articles must be classed as manufactures. If all these last three groups of articles (C, D, and E), most of which are manufactured, be combined, it will be found that in 1890 they constituted 44 per cent of our imports and in 1901 about 40 per cent.

The following table shows the principal articles imported into the United States as raw materials for use in our manufacturing industries:

Value of principal articles imported into the United States for use in manufacturing.

Articles.	Year ending June 30—			
	1890.	1895.	1900.	1901.
Fibers	$20,541,767	$13,282,081	$26,373,805	$22,932,506
Silk	24,331,867	22,626,056	45,329,760	30,051,365
India rubber and gutta-percha	14,854,512	18,475,382	31,792,497	28,586,340
Hides and skins	21,881,886	26,122,942	57,935,698	42,220,193
Furs and fur skins	2,165,213	3,320,058	6,646,807	6,238,842
Chemicals, drugs, and dyes	41,601,978	43,567,009	58,705,152	56,463,030
Wool	15,264,083	25,556,421	20,260,986	12,529,881
Cotton	1,392,728	4,714,375	7,960,945	6,787,813
Wood	13,518,310	14,661,976	15,837,332	15,604,464
Tin, in bars, blocks, etc	6,989,909	6,787,424	19,104,301	19,806,551

Every one of these articles shows some increase in importations from 1890 to 1900, while in almost every instance there is more or less falling off in 1901 as compared with 1900. The most rapid increase in imports during the decade is found in india rubber, which more than doubled; hides and skins, which were more than two and one-half times as great in 1900 as in 1890; furs; cotton, nearly six times as much in 1900 as in 1890; silk, which nearly doubled in the decade; and tin, which increased in still greater ratio. Our imports of wool were much larger in 1895, when there was no duty, than in 1900, while the falling off in importations in 1901 was so great as to bring the figure for that year below that for 1890. Our imports of wood and lumber have increased comparatively slowly, as have also those of fibers.

GEOGRAPHICAL DISTRIBUTION OF TRADE.

FOREIGN GRAND DIVISIONS WITH WHICH TRADE IS CONDUCTED.

Any discussion of foreign trade must take into account the distribution of trade among the different foreign divisions and countries.

Per cent of imports and exports from and to grand divisions.[1]

	Year ending June 30—										
	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Europe:	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
Imports	54.36	47.33	52.91	45.05	52.41	53.69	56.26	49.66	50.76	51.84	52.20
Exports	79.68	82.56	78.09	78.56	77.76	76.26	77.39	79.07	76.33	74.60	76.40
North America:											
Imports	19.32	21.04	21.21	25.49	18.29	16.27	13.85	14.88	16.09	15.30	17.64
Exports	10.92	10.25	14.13	13.42	13.45	13.21	11.89	11.35	12.88	13.45	13.22
South America:											
Imports	14.05	18.22	11.80	15.29	15.32	13.96	14.04	14.95	12.42	11.02	13.41
Exports	3.81	3.22	3.85	3.72	4.15	4.11	3.21	2.75	2.90	2.79	3.01

[1] Treasury Department. The Foreign Commerce, etc., 1900, Vol. II, p. 1030.

Per cent of imports and exports from and to grand divisions—Continued.

	Year ending June 30—										
	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Asia:	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
Imports	8.55	9.69	10.11	10.10	10.61	11.49	11.41	15.08	15.36	16.45	14.29
Exports	2.89	1.90	1.91	2.84	2.15	2.90	3.74	3.68	3.94	4.66	3.32
Oceania:											
Imports	3.04	2.79	3.00	3.28	2.39	3.16	3.19	4.36	3.87	4.07	1.37
Exports	2.10	1.51	1.32	1.84	1.62	1.95	2.16	1.78	2.43	3.11	2.37
Africa:											
Imports	.50	.64	.68	.53	.78	1.43	1.25	1.17	1.50	1.32	1.09
Exports	.54	.49	.61	.55	.79	1.57	1.61	1.42	1.52	1.39	1.71
All other countries:[1]											
Imports	.17	.28	.28	.25	.19	.....	.....	.....	.....	.....	.....
Exports	.07	.08	.10	.08	.09	.....	.....	.....	.....	.....	.....

[1] All countries enumerated after 1895.

The exports to Europe are, approximately, 75 per cent of the total exports, remaining more or less regularly at that percentage, but showing in the most recent years a slight tendency to decline.

North America, on the other hand, shows a slight increase and South America a decrease in the amount of our exports to them. The grand divisions in which the greatest change in exports is found are Asia, Oceania, and Africa. Though the total exports to these divisions are relatively small, they show the greatest increase. To Asia the exports have risen from 2.89 per cent in 1891 and 1.90 per cent in 1892, to 4.66 per cent of the total exports for the year 1900. Oceania, in like manner, shows an increase from 2.10 per cent of the total exports in 1891 to 3.11 per cent in 1900, and Africa from .54 per cent in 1891 to 1.71 per cent in 1901.

In considering the percentage of the exports going to the different divisions in 1901, the political condition must be kept in mind, especially in noticing the decrease in exports to Asia and Oceania. Shipments to Hawaii during the year were not classed as exports, so that in comparison with former years the percentage of exports to Oceania was considerably lowered for 1901. The unsettled condition of China would largely explain the falling off in exports to Asia.

From the above table will be seen also the relative importance of our imports from different foreign grand divisions. While, as might be expected, Europe furnishes us, in most years, with more products than all other parts of the world combined, the proportion of imports from that continent is much less than the proportion of our exports to Europe. In 1901, 52.20 per cent of our imports were from Europe. No permanent change in the proportion of imports from that grand division is shown in the table. The proportion of imports from North America in 1901 was 17.64 per cent. While there have been very considerable variations in the proportion from year to year, there seems, on the whole, a tendency toward a relative decrease in the imports from other countries of this grand division. The importations from South Amer-

ica have been, until very recently, next in importance to those from North America, but the proportion coming from that division has tended to decrease somewhat, standing at 13.41 per cent in 1901. On the other hand, a most notable increase of importations from Asia may be observed. In 1891, 8.55 per cent of our imports were from that continent, but the proportion rose to 16.45 per cent in 1900 and remained at 14.29 per cent in 1901.

It has already been pointed out that a large and growing proportion of our imports are raw materials of manufacture, especially tropical goods. The significance of this fact may be seen by observing that the continents which furnish us chiefly goods of this character are those only from which we import more than we export to them. The balance of trade in favor of the United States in its dealings with Europe has increased immensely as compared with 1891. So, too, the other countries of North America import much more from us than they supply to us, although the balance of trade in favor of the United States is much greater in our dealings with the provinces to the north of us than with the countries of the subtropical region. On the other hand, we imported from South America in 1901 more than two and one-half times as many goods as we exported to that continent. The balance of trade against the United States, however, was considerably less in 1901 than in 1891. In the case of our trade with Asia, also, we find imports exceeding exports in 1901 by nearly 120 per cent, though here again there is a marked reduction in the balance of trade against the United States as compared with the year 1891.

LEADING FOREIGN COUNTRIES WITH WHICH TRADE IS CONDUCTED.

The following table shows the imports and exports of domestic and foreign merchandise for the year 1901 by the leading foreign countries with which American trade is conducted:

Imports and exports of domestic and foreign merchandise, 1891 and 1901.

Countries.	Imports.		Exports.	
	1891.	1901.	1891.	1901.
United Kingdom	$194,723,262	$143,365,901	$445,414,026	$631,266,263
Germany	97,316,388	100,293,666	92,795,456	191,072,252
Netherlands	12,422,174	20,596,272	24,113,977	84,352,470
France	76,688,995	75,454,098	60,693,190	78,923,914
Belgium	10,945,672	14,600,360	27,540,424	49,390,259
Italy	21,678,208	24,618,157	16,046,925	34,468,939
Denmark	268,686	645,098	3,317,137	16,178,613
Austria-Hungary	11,595,310	10,067,175	1,311,083	7,222,650
Spain	6,083,481	5,409,301	14,619,335	15,484,738
Russia, Baltic and White Seas	3,186,337	5,546,280	7,260,115	6,345,298
Sweden and Norway	3,723,201	3,487,689	4,943,180	11,844,152
Total Europe	459,305,372	429,436,180	704,798,047	1,136,092,260
British North America	39,434,535	42,890,860	39,443,755	107,739,333
Mexico	27,295,992	28,868,011	14,969,620	36,475,350
Cuba	61,714,395	43,423,068	12,224,888	25,964,801
Total North America	163,226,079	145,161,044	96,549,129	196,570,118

Imports and exports of domestic and foreign merchandise, 1891 and 1901—Continued.

Countries.	Imports.		Exports.	
	1891.	1901.	1891.	1901.
Brazil	$83,230,595	$70,643,347	$14,120,246	$12,034,267
Argentina	5,976,544	8,065,318	2,820,035	11,587,668
Chile	3,448,290	8,645,604	3,145,625	5,294,726
Total South America	118,736,668	110,329,667	33,708,290	44,770,888
Japan	19,309,198	29,115,370	4,807,693	19,000,207
Chinese Empire	19,321,850	18,303,330	8,701,008	10,405,834
Hongkong	563,275	1,390,224	4,768,697	8,009,181
Total Asia	73,769,111	117,519,955	25,563,308	49,402,814
British Australasia	6,239,021	4,645,950	13,017,132	30,713,345
Total Oceania	25,621,134	11,272,711	18,621,801	35,377,176
British Africa	959,401	813,440	3,141,799	21,654,458
Total Africa	4,207,146	8,958,459	5,250,235	25,542,301

From this table it will be seen that the United Kingdom is by all means our most important foreign market, while, naturally, we also import more goods from that country than from any other. Our exports to Great Britain and Ireland in 1901 were $631,266,263, or considerably more than one-half of our total exports to Europe, and more than 40 per cent of our total exports. A considerable amount of goods shipped to Great Britain, especially of manufactured articles, is reexported from that country. Our imports from the United Kingdom, on the other hand, were $143,365,901 in 1901, or about one-third of the total importation from Europe. Our exports to the United Kingdom have increased in about the same proportion as those to all Europe, while our imports from that country have decreased very materially during the past ten years. The imports from Great Britain amounted to $194,723,262 in 1891.

Germany, which is able more nearly than Great Britain to feed its population with the products of its domestic agriculture and those of adjacent countries, in 1901 took from us $191,072,252 worth of goods, while we imported from that country a little over $100,000,000 worth. Germany, like Great Britain, reexports a considerable portion of manufactured articles imported from the United States. Our exports to Germany have increased much more rapidly than those to the continent of Europe as a whole. They stood at only $92,795,456 in 1891. On the other hand, our imports from Germany, notwithstanding the great industrial development of that country, were little more in 1901 than in 1891, and considerably less than in 1897. The other countries of Europe which now furnish us the most valuable markets are, in the order named, Netherlands, France, Belgium, Italy, and Denmark. The increase in our exportations to the Netherlands is especially striking, but doubtless a large proportion of these go to other countries, especially Germany. We sent to the Netherlands in 1891 goods to the value of $24,113,977, while in 1900 our exports

were $84,352,470. We import far more commodities from France than from any of the other countries of Europe, except Great Britain and Germany, but our imports from France in 1901 were less than in 1891.

Among North American countries British North America, naturally, furnishes us the most valuable market. We exported to that country in 1901 no less than $107,739,333 worth of goods, an increase since 1891 of nearly $70,000,000. Our imports from British North America in 1901 amounted to $42,890,860, about $3,500,000 more than we imported in 1891. Mexico stands next to Canada in regard to the purchase of the products of the United States, and our exports to that country are likewise increasing with very great rapidity, while our imports have remained practically stationary during the past 10 years. Our exports to Cuba, which had risen to a considerable figure in 1894, were greatly reduced thereafter by the state of warfare in the island. After the restoration of peace, during the years 1899, 1900, and 1901, the increase in exports was very rapid, probably partly on account of the presence of American soldiers and officials. There was an enormous falling off in our imports from Cuba, which consist chiefly of sugar and tobacco, after the years 1893 and 1894; and although the increase since 1899 has been marked, the imports from Cuba in 1901, $43,423,088, were less than 60 per cent as great as the imports in 1893.

Our exports to Brazil are still somewhat greater than those to any other South American country, although much less than our exports to the smaller countries of North America, Cuba and Mexico. Moreover, our export trade to Brazil is gradually decreasing, being over $2,000,000 less in 1901 than in 1891. Our imports from Brazil are very much greater than our exports; but here, again, a decrease is seen for 1901 as compared with 1891. On the other hand, our trade with Argentina is increasing, exports to that country in 1901 being almost equal to those to Brazil and more than four times as great as the exports to Argentina in 1891. Corresponding with this growth in export trade there has been a somewhat smaller increase in our imports from Argentina. Our exports to Chile have increased very materially since 1891, while the imports from that country in 1901 were considerably more than twice as great as in 1891.

One of the most striking features of our export trade has been the rapid increase in exportations to Japan, which rose from $4,807,693 in 1891 to $29,087,475 in 1900. There was a marked decrease in our export trade to Japan in 1901, partly due, doubtless, to the troubles in China. Our imports from Japan are even greater than our exports, and they have increased with very considerable rapidity during the past decade, but the rate of increase in imports has been much less than in exports. Our exports to China and Hongkong (the latter being

chiefly destined for the Chinese Empire) increased steadily from 1891 to 1900. In the latter year they aggregated $23,745,145, more than 75 per cent in excess of the exports of 1891. The disturbances in China during 1901 greatly decreased her importations. Our imports from China and Hongkong increased during the past decade at a much slower rate than exports, but in 1900 they were still somewhat greater than exports, amounting to $28,153,183.

The exports of the United States to British Australasia, including Australia, Tasmania, and New Zealand, are large and rapidly increasing. We sent to these colonies in 1901 goods to the value of $30,713,345, an increase of more than 125 per cent since 1891. Our imports from British Australasia, on the other hand, decreased considerably during this period, and in 1901 were less than one-sixth as great as our exports. Both our export and import trade with Hawaii has shown a marked increase. Since the annexation, separate statistics have not been kept, so that figures for 1901 are not available. Our exports to Hawaii in 1900 amounted to $13,509,148, or more than two and one-half times as much as in 1891, while our imports in 1900 were $20,707,903, as compared with $13,895,597 in 1891.

The very large exports to British Africa from the United States in 1901 are explained for the most part by the furnishing of war supplies, and are not therefore to be considered normal. Ordinarily our trade with all of the African countries is comparatively small, and has increased little except in the case of Egypt.

CHARACTER OF EXPORTS TO AND IMPORTS FROM EUROPEAN COUNTRIES.

The statistics of the Treasury Department do not summarize the exports to and the imports from the grand divisions and countries, classified according to the broad groups into which the totals of exports and imports are divided. It is, of course, a familiar fact that our exports of agricultural products go chiefly to Europe, the one grand division which is most dependent on food from outside sources. Europe also takes a very large proportion of our mineral exports, which are used as raw material for manufacturing industry.

The Commission has analyzed the detailed statistics of exports and imports to ascertain the amount of manufactured articles which were sent to and received from Europe in 1900. As pointed out above, in most years Europe takes 75 per cent or more of our total exports. In 1900 out of $1,394,483,082 of exports (domestic and foreign) we sent to Europe $1,040,167,763. Our exports of manufactured articles to Europe naturally bear a much smaller proportion to our total exports of manufactured articles. Of $433,851,756 of exports of domestic manufactures in 1900, the various European countries took $236,532,316, or nearly 55 per cent. Europe is still our most impor-

tant market for manufactured products, and doubtless will long continue to consume, unless European tariff restrictions interfere, half of our exports of such articles. It is obviously desirable, therefore, that proper means should be taken to protect and cultivate our European markets. At the same time the greatest increase in export trade of manufactures for the future is doubtless to be expected in the more undeveloped countries of Africa, South America, and Asia. It has already been noted that our exports to Asia and Australia, in particular, have increased with great rapidity during recent years, and these exports are in very large proportion manufactured articles.

Our imports from European countries are naturally, for the most part, articles already manufactured or partly manufactured. Europe furnishes us in most years approximately half of our total imports, the exact proportion in 1900 being 52.20 per cent. In 1900 our total imports of manufactures falling under Class D, articles ready for consumption, and Class E, articles of voluntary use and luxuries, chiefly manufactured, were $251,600,998, of which Europe supplied us with $209,327,078, or considerably more than four-fifths. Our imports of articles of Class C, partly or wholly manufactured articles which become the basis of further manufacture in the United States, amounted to $79,080,716 in 1900, of which $58,267,393, or about five-sevenths, came from European countries. Our exports of manufactured products to Europe are about 12 per cent less than our imports.

The following table shows, by leading European countries, the exports of manufactured articles from the United States, as well as the imports of Classes D and E (so far as they are manufactured) combined, and of Class C separately. Other tables show in detail the leading manufactured articles exported to and imported from Great Britain, Germany, and France, respectively.

Value of imports and exports of manufactures between the United States and European countries, 1900.

Countries.	Imports, Class C.	Imports, Classes D and E.	Exports.
Austria-Hungary	$227,568	$4,421,873	$2,813,436
Belgium	1,866,982	5,080,027	11,971,465
Denmark	9,242	63,730	3,716,263
France	5,817,629	47,573,376	28,585,527
Germany	15,837,957	45,656,079	43,009,777
Italy	4,670,246	2,438,886	7,180,561
Netherlands	590,600	5,272,312	31,536,317
Portugal	28,723	130,347	432,121
Russia, Baltic and White Seas	87,102	583,140	2,733,362
Russia, Black Sea	226	53,769	1,205,255
Spain	152,844	1,087,038	528,312
Norway and Sweden	2,116,778	622,663	4,888,295
Switzerland	859,054	15,109,413	230,361
Turkey in Europe	430,951	1,690,256	243,127
United Kingdom	25,624,704	79,494,134	96,500,863
Total	58,265,605	209,227,043	235,575,042
All Europe	58,267,393	209,327,078	236,582,316

Value of imports and exports of manufactures between the United States and the United Kingdom, 1900.

Leading articles.	Imports, Class C.	Imports, Classes D and E.	Exports.
Agricultural implements			$1,350,443
Articles the growth, etc., of the United States, returned		$1,322,309	
Art works, paintings and statuary		571,842	
Books, music, maps, and other printed matter		2,118,775	732,178
Bristles, brooms, and brushes		756,593	
Carriages, and vehicles, and parts of			821,774
Chemicals, drugs, and dyes	$4,123,919		2,940,032
Clocks and watches, and parts of			555,182
Copper, manufactures of	7,856,350		10,520,748
Cotton, manufactures of		17,110,588	
Earthen, stone, and china ware		3,235,393	
Fertilizers			1,007,236
Fibers, vegetable, and textile grasses, and manufactures of		19,200,409	548,132
Instruments and apparatus for scientific purposes			1,145,764
Iron and steel, manufactures of	6,449,155	5,246,742	21,426,557
Jewelry, manufactures of gold and silver, and precious stones		3,957,509	
Leather, manufactures of	1,902,625	794,225	16,344,525
Liquors, malt and others		1,324,543	
Marble and stone, manufactures of			915,985
Metal, manufactures of		1,238,149	
Musical instruments			824,693
Oils	1,473,363		14,149,847
Paper, manufactures of		611,704	1,563,759
Paints, pigments, and colors	526,472		586,061
Paraffin and paraffin wax			4,947,036
Silk, manufactures of		2,804,801	
Soap			625,883
Spirits, distilled		1,290,560	
Starch			1,850,248
Sugar, refined, including candy and confectionery			1,680,165
Tin, manufactures of		7,177,134	
Tobacco, manufactures of			1,230,897
Wood, manufactures of			3,687,718
Wool, manufactures of		7,597,135	
Zinc, manufactures of			1,281,113
Total, above articles	22,331,884	76,358,411	90,685,976

Value of imports and exports of manufactures between the United States and Germany, 1900.

Leading articles.	Imports, Class C.	Imports, classes D and E.	Exports.
Agricultural implements			$2,886,454
Bead and bead ornaments		$667,465	
Books, music, maps, and other printed matter		802,312	
Bristles, brooms, and brushes		1,024,607	
Cement: Roman, Portland, and other hydraulic	$1,885,702		
Chemicals, drugs, and dyes	8,580,556		870,923
Copper, manufactures of			10,998,025
Cotton, manufactures of		8,863,297	
Earthen, stone, and china ware		2,787,163	
Feathers, and flowers, etc., artificial		632,763	
Fertilizers			2,513,540
Fibers, vegetable and textile grasses, manufactures of		2,044,671	
Furs, manufactures of	1,315,417		
Glass and glassware		1,462,353	
Instruments and apparatus for scientific purposes			516,908
Jewelry, manufactures of gold and silver, and precious stones		882,212	
Iron and steel, manufactures of		2,657,854	8,109,095
Leather, manufactures of	2,044,811	2,918,628	1,180,910
Metal, manufactures of		2,106,696	
Musical instruments, parts of, etc		816,110	
Oils, mineral, refined			10,052,324
Paints, pigments, and colors	708,866		
Paper, manufactures of		2,284,453	
Paraffin and paraffin wax			1,296,056
Silk, manufactures of		5,102,436	
Spirits, distilled			710,580
Toys		2,267,035	
Wines	1,178,858		
Wood, manufactures of		506,356	611,709
Wool, manufactures of		3,245,619	
Total, above articles	14,535,352	42,250,888	39,741,119

Value of imports and exports of manufactures between the United States and France, 1900.

Leading articles.	Imports, Class C.	Imports, Classes D and E.	Exports.
Agricultural implements			$2,910,575
Art works, painting and statuary		$1,557,629	
Bristles, brooms, and brushes		782,753	
Chemicals, drugs, and dyes	$1,183,688		
Copper, manufactures of, not including copper ore	851,350		13,214,510
Cotton, manufactures of, cotton laces, etc		5,623,340	
Earthern, stone, and china ware		1,461,701	
Feathers and flowers, etc., artificial		1,560,785	
Fertilizers			536,725
Fibers, vegetable and textile grasses, manufactures of		553,340	
Furs, manufactures of	1,624,471		
Glass and glassware		674,204	
Instruments and apparatus for scientific purposes			1,257,719
Iron and steel, manufactures of			3,949,830
Jewelry, manufactures of gold and silver and precious stones		4,570,681	
Leather, manufactures of	556,282	2,308,557	542,979
Metal, manufactures of		1,227,522	
Oils, mineral, refined	778,823		1,824,913
Silk, manufactures of		14,264,025	
Spirits, distilled		884,239	
Wines		4,644,927	
Wool, manufactures of		2,718,459	
Total, above articles	4,993,614	43,022,162	24,287,252

IRON AND STEEL EXPORTS.

The increase in the exports of iron and steel products, which has already been mentioned as among the most significant of the movements of the past decade, is shown more in detail in the accompanying table, where is given the value of the exports of the principal iron and steel products for the years 1891, 1895, 1900, and 1901:

Values of iron and steel, and manufactures of, exported.[1]

Articles.	Year ending June 30—			
	1891.	1895.	1900.	1901.
Iron ore		$6,000	$79,042	$175,817
Pig iron	$221,842	277,066	3,124,753	3,764,563
Bar iron	96,586	143,221	378,120	884,094
Ingots, bars, and rods of steel	29,247	95,471	2,399,993	6,313,950
Rails, steel	536,105	266,773	9,218,144	10,841,189
Sheets and plates, steel	5,349	66,286	1,249,576	1,732,873
Structural iron and steel[2]			2,835,588	3,357,023
Wire	859,870	1,277,479	5,982,400	4,104,563
Builders' hardware:				
Locks, hinges, etc	2,014,882	2,483,666	5,915,929	5,569,903
Saws and tools	1,844,290	1,984,612	3,732,995	3,634,610
Total machinery	16,315,188	17,258,216	55,485,495	49,814,489
Total iron and steel	28,909,614	32,000,989	121,913,548	117,319,270

[1] Compiled from Statistical Abstract, 1900, Table 44, p. 190, and Monthly Summary of Commerce and Finance, June, 1901, p. 3151.
[2] Included in "All other manufactures of iron and steel" prior to 1898.

The total exports of these products increased from $28,909,614 in 1891 to $121,913,548 in 1900, an increase of 322 per cent, and declined slightly in 1901. The total for machinery increased from $16,315,188 in 1891 to $55,485,495 in 1900, an increase of 240 per cent. Wire, pig iron, ingots, steel sheets, and steel rails show even much larger

increase, exports of pig iron being almost fifteen times as large in 1900 as in 1891, steel ingots eighty times, and steel rails almost twenty times.

The distribution of iron and steel exports among the various foreign countries may be taken as typical of exports in general, and for that reason is worthy a somewhat detailed study. A table in Appendix IV, drawn up to show the value of exports of iron and steel for the years 1891, 1895, and 1900, distinguishes machinery and engines, hardware, iron and steel, and in several cases agricultural implements, exported to countries selected from the old manufacturing parts of Europe and the newer parts of Asia and Africa as well as of South America. Countries have also been included which showed no increase in the products of iron and steel exported to them. This has been the case especially with parts of South America, which have been introduced to contrast with Asia, North America, and Australasia.

From this table it is seen that the increase in iron and steel exports to nearly all the countries has been steady. The exceptions to this general increase are largely certain parts of South America, as Dutch and French Guiana, Peru, Venezuela, and French Oceania.

The increase, however, has not been uniform. The great bulk of our exports of iron and steel, as well as our exports in general, goes to Europe. But the most remarkable increases have not been in Europe. The largest exports of iron and steel go to the United Kingdom, Germany, and France. The increase in exports of machinery from 1891 to 1900 has been, for the United Kingdom, from $2,036,786 to $10,620,050, over five-fold. For Germany the increase has been from $702,442 to $4,786,409, or about six and one-half times in 1900 what it had been in 1891. This increase, however, should not be ascribed wholly to the German market, but also to the Russian market, since a large part of the Russian imports of iron and steel from America are sold to German houses, which have better connections with Russian purchasers than have the American exporters. France in like manner showed an increase from $314,399 in 1891 to $3,016,472 in 1900, or almost tenfold.

In Europe, the largest per cent of increase is found, not in these large and leading importing countries, but among the smaller and less-developed countries. The exports of iron and steel to Sweden and Norway rose from $60,804 in 1891 to $1,278,837 in 1900, which was twenty times the earlier figure. Similarly, such exports to Russia, on the Baltic and White seas, rose from $70,964 to $1,417,475, a rate of increase equal to that of Norway and Sweden and four times the rate of increase of the United Kingdom, to which should be added whatever proportion of the German imports is destined to Russia.

Similar increases will be noticed in following the table for exports

to North America. In point of size the exports of iron and steel to Quebec, Ontario, and Manitoba exceed even those to the United Kingdom. The increase here is also larger than that of the United Kingdom, France, or Germany, miscellaneous machinery having risen from $673,129 in 1891 to $5,224,608 in 1900; railroad rails from $383,344 to $2,424,736, and all other products of iron and steel from $859,704 to $10,105,016. The increase in British Columbia has been less than that to the Canadian provinces, and in Mexico the increase has been more nearly equal to that of Germany.

In South America, a large increase is shown in the exports of American agricultural implements to Argentina, especially of mowers and reapers, the value of which in 1900 was sixteen times the value in 1891. The exports of all other products of iron and steel to that country were in 1900 twenty times those of 1891. Other countries of South America show decreased imports of iron and steel. The value of miscellaneous machinery exported to Brazil in 1891 was $489,807, and in 1900 it was $299,008. Locomotives in like manner had decreased from $818,652 in 1891 to $151,941 in 1900. To Chile a decrease is found in almost all the iron and steel articles, except nails and spikes. Colombia, in like manner, shows a decrease. In Ecuador, on the other hand, we find an increase of threefold for a small volume. Of the three Guianas the largest exports of these articles go to British Guiana, where the increase has been from $29,256 to $123,240. But in Dutch Guiana the increase has been from $4,792 to $31,116 in 1900, and $45,821 in 1899. Peru and Uruguay show relatively no change, but Venezuela shows the most marked decrease, for machinery from $163,450 in 1891 to $49,670 in 1900, and for "all other products of iron and steel" from $330,869 to $112,310.

China shows in 1900 that iron and steel imports from the United States were $1,049,232, or not quite five times those of 1891. Our exports to Hongkong, in like manner, were five times greater in 1900 than in 1891. But for British East Indies the increase was from $41,634 to $1,502,696, or thirty-five times greater in 1900 than in 1891. Exports to Asiatic Russia, in like manner, rose from $20,155 in 1891 to $2,384,945, which was over one hundred times the exports in 1891. The exports to Japan increased from $125,707 for "all other products of iron and steel" to $4,398,981 in 1900, or thirty-five times. British Australasia showed an increase, especially in wire, but exports to French Oceania declined slightly. For Hawaii and the Philippine Islands the increase was very large, especially for the latter, to which iron and steel exports went in 1891 to the value of $3,992, while in 1900 they were $383,892, a hundredfold increase, comparable with that of Asiatic Russia. In like manner the increase to Turkey in Africa was from $1,501 in 1891 to $109,963 in 1900.

EXPORTS OF BREADSTUFFS.

Exports of breadstuffs do not show the same large increase that is found in the exports of iron and steel (see Appendix IV). This increase is not found in the exports to the newer countries and the neutral territory, as is largely the case with iron and steel; but the older parts of Europe, with the large centers of population engaged in industrial activities, show not only the largest absolute imports of American breadstuffs but the largest increase in those imports. In the comparison exports of cotton and cotton manufactures have been introduced, and the table in the appendix shows the exports for the years 1891, 1895, and 1900 of breadstuffs and cotton to the principal European and American countries. The exports of those articles to other countries have remained steadily at about the same amount, and so these have not been included in the table.

The most pronounced increase among the breadstuffs is found in the exports of corn, which for Denmark have risen from $460,711 in 1891 to $7,509,637 in 1900, for Germany from $2,042,404 in 1891 to $18,776,736 in 1900, and for the United Kingdom from $8,167,775 to $34,993,528. Wheat, on the other hand, does not show such a great increase, but fluctuates more from one year to another. The extreme case of this is seen in France, to which wheat exports were $12,590,322 in 1891, but in 1895 they had fallen to $945,594, while corn had increased. The exports of wheat to France declined in 1896 and 1897, while exports of corn rapidly increased, but in 1898 wheat exports increased 160 fold, and then the next year relapsed to one-twentieth of that amount. Corn also showed some of these fluctuations, but they were much less extreme. The exports of corn to Mexico have fallen, also those of wheat and raw cotton. Exports of wheat and wheat flour to Quebec and Manitoba also declined, but to Norway and Sweden the exports of these products, as well as of corn, showed a large increase.

Exports of raw cotton have simply maintained their level for France, increased slightly for Belgium, the Netherlands, and Quebec, but have declined for Russia on the Baltic, Norway and Sweden, the United Kingdom, and Mexico. The largest increase is found for Denmark and Italy. Exports of manufactures of cotton have increased most for Cuba, Quebec and Manitoba, and Germany.

EXPORTS BY CUSTOMS DISTRICTS.

As an exporter of domestic products New York stands first in rank, as is seen by the accompanying table, but the proportion of the total exports going from New York has declined from 46.3 per cent in 1886 to 37.3 per cent in 1900. The second largest export center is New Orleans, with a percentage of the total exports declining from 12.1 per cent in 1886 to 8.3 per cent in 1900. In 1895 Boston exceeded New Orleans in

value of exports, but in 1900 Boston fell below Baltimore, which had risen from the point of exporting 5.2 per cent of the total exports in 1886 to 8.2 per cent in 1900. Philadelphia had also increased from shipping 4.9 per cent of the total exports in 1886, and 4.3 per cent in 1890, to 5.6 per cent in 1900. But Galveston, Tex., shows the largest increase in the proportion of her exports to the whole, having risen from 2.5 per cent in 1886 to 6.1 per cent in 1900. San Francisco and Savannah have both decreased in the relative proportion of their exports to the whole. While Chicago has just maintained her share, Detroit, Pensacola, Puget Sound, and Buffalo Creek have increased.

Value of merchandise exported from certain selected ports.[1]

Ports.	Year ending June 30—							
	1886.		1890.		1895.		1900.	
		Per ct.		Per ct.		Per ct.		Per ct.
Baltimore, Md	$35,847,788	5.2	$73,963,693	8.4	$61,988,991	7.7	$115,530,378	8.2
Boston, Mass	54,099,068	8.0	71,201,944	8.2	85,505,196	10.6	112,195,555	8.0
Charleston, S. C	17,630,632	2.6	13,788,751	1.6	10,712,471	1.3	7,151,720	.5
Newport News, Va	3,684,355	.5	6,958,369	.8	13,469,541	1.7	34,758,323	2.5
New York, N. Y	314,329,411	46.3	349,051,791	40.7	325,580,062	40.3	518,834,471	37.3
Philadelphia, Pa	33,753,317	4.9	37,410,683	4.3	35,043,093	4.3	78,406,681	5.6
Savannah, Ga	20,304,812	3.0	30,884,451	3.6	20,523,760	2.5	38,251,961	2.7
Wilmington, N. C	4,390,331	.6	6,934,720	.8	6,590,264	.8	10,975,511	.8
Galveston, Tex	16,966,851	2.5	24,446,831	2.9	41,886,651	5.2	85,657,024	6.1
Mobile, Ala	2,748,811	.4	3,372,429	.4	5,173,308	.6	13,206,334	.9
New Orleans, La	82,560,196	12.1	108,126,891	12.6	68,413,362	8.4	115,858,764	8.3
Pensacola, Fla	2,184,073	.3	3,451,735	.4	3,042,113	.3	14,413,922	1.0
Puget Sound, Wash	2,123,067	.3	3,326,145	.4	5,805,193	.7	17,903,107	1.2
San Francisco, Cal	30,228,424	4.4	36,876,091	4.3	24,873,148	3.0	40,368,288	2.9
Buffalo Creek, N. Y	359,158	.05	505,170	.06	4,220,770	.5	14,488,028	1.0
Chicago, Ill	2,309,577	.3	2,480,852	.3	1,558,069	.2	5,211,770	.3
Cuyahoga, Ohio	272,525	.04	468,286	.05	897,893	.11	3,493,168	.2
Detroit, Mich	4,080,737	.6	6,865,376	.9	7,785,891	.9	16,858,456	1.2
Niagara, N. Y	50,824	.....	83,065	.....	5,417,050	.7	9,718,135	.7
Superior, Mich	164,107	.02	2,086,383	2.4	2,328,840	.3	6,760,047	.5
Vermont, Vt	1,529,804	2.2	2,168,257	2.5	7,388,898	.9	9,416,548	.6
All other	.....	5.0	.....	3.5	.....	9.0	.....	9.5
Total	679,524,890	100.0	857,828,684	100.0	807,538,165	100.0	1,394,483,082	100.0

[1] Computed from Statistical Abstract, 1900, p. 116.

EXPORTS BY ARTICLES AND CUSTOMS DISTRICTS.

The great volume of exports is distributed from a comparatively small number of ports, and certain ports have the position of being exporters of the staples raised in large sections of country for which they furnish natural outlets. The exports of cotton, breadstuffs, and provisions may be studied according to the principal customs districts from which they are exported. (See Appendix V.) In the case of raw cotton, Baltimore and Savannah seem to be simply maintaining their position as exporters of this staple; but Boston, Charleston, S. C., Newport News, Va., New York, Norfolk and Portsmouth, Va., and Philadelphia have been decidedly declining in their exports of cotton; while Pensacola, Fla., Mobile, Ala., Galveston, Tex., and Wilmington, N. C., have increased their cotton exports. Comparing the positions of different ports in 1891 and in 1900, we find that New Orleans has maintained itself as the largest exporter of cotton, but New York,

which was second in 1891, has given place to Galveston, which in 1900 is close to New Orleans; and Savannah from fourth place in 1891 has come up to third, so that New York has fallen to the fourth place.

In 1891 New York was the largest exporter of corn, Baltimore, New Orleans, Boston, Philadelphia, Chicago, and Newport News following in the order named; but in 1900, in a total export five times as large as that of 1891, Baltimore had become the largest corn export district, followed by New York, next by Philadelphia, which was now third instead of fifth, then by New Orleans, now fourth, formerly third. Newport News instead of being seventh is now fifth, and Boston instead of fourth is now sixth. The importance of Galveston is notable here. In 1891 the exports of corn from that port amounted to $1,640, but in 1900 they were $2,896,999, placing Galveston ahead of Chicago, which in 1891 stood as the sixth largest corn export district, and now, in 1900, is eighth.

The exports of wheat for the same time show a shifting, in which San Francisco, which had been first in point of importance in 1891, fell to fourth place in 1900, owing to the substitution of wheat flour for wheat in export trade and the establishment of mills in the Puget Sound district. New York rose from second to first place. Boston in like manner rose from the eleventh place in 1891 to be the third largest exporter of wheat in 1900. New Orleans came to be fifth in 1900 from being sixth in 1891, while Baltimore was only the sixth largest in 1900 instead of third.

In the exports of wheat flour New York has been first in importance and Baltimore second; Newport News became the third largest exporter in 1900, having been the sixth largest in 1891. Philadelphia in 1900 surpassed Boston, and Puget Sound and Willamette became important shippers not far inferior to San Francisco, which had fallen from the fourth to the seventh place.

As shippers of fresh beef, New York and Boston have continued to hold first and second places in importance. Baltimore has become third, and Huron, Mich., fourth, both exceeding in 1900 the exports from Philadelphia.

As to the exports of ham, the largest values exported in 1891 were by New York and Boston, and then by Philadelphia and Baltimore. But in 1900 the exports from Boston exceeded those of New York, and the exports from Baltimore were greater than those of Philadelphia.

In exports of crude mineral oil the important points of shipment in 1891 were Philadelphia and New York, but in 1895 and in 1900 a comparatively small amount was shipped from New York, and Delaware in 1900 had become the important point of shipment.

The export of naphtha has greatly increased from New York and from Philadelphia, as well as from Delaware.

The chief points of shipping illuminating oil have continued to be

New York and Philadelphia, New York shipping about 70 per cent of these exports and Philadelphia about 20 per cent. Baltimore in 1900 exported about 5 per cent of this article. During the past ten years the relative importance of these ports as exporters of illuminating oil has remained about the same.

PROMOTION OF FOREIGN TRADE.

THE CONSULAR SERVICE.

Until recent years it has been the policy of leading countries in the promotion of foreign trade to leave the actual development of that trade to private enterprise, and to restrict the efforts of the Government to making trade as safe as possible. In this way only, it has been assumed, could the state be of the greatest service to commerce. This has been definitely the policy of Great Britain, the pioneer in the development of foreign trade, since the middle of the present century. Within the past five or ten years, however, other countries, especially the United States and Germany, have become competitors of Great Britain to a larger extent than ever before in foreign trade, and even in the domestic trade of the British Isles themselves. These other countries are not relying solely upon the private efforts of their manufacturers, but have assisted them to a considerable extent through governmental agencies. Apart from the quality and cheapness of the goods, and the freights and tariffs of different countries, the opening up of foreign markets depends upon accurate commercial intelligence regarding the needs of those markets. This requirement has been felt by several countries, with the result that the consular service, which has hitherto been looked upon as a semi-diplomatic branch of the Government, is more and more regarded as a commercial intelligence bureau. Certain of the leading countries of Europe provide for commercial agents in foreign lands or for commercial attachés to the consular service.

In Germany the department of state sends five agricultural experts, one each to Russia, France, Great Britain, the United States, and Austria, and, while there are no distinctively commercial attachés to the consulates, Germany has sent industrial commissions to eastern Asia to discover new fields for the exploitation of German manufactures. The reports of the consuls, touching opportunities for the exporting of German products, are published by the minister of commerce in a periodical copied after the Consular Reports and "advance sheets" of the Bureau of Foreign Commerce of the United States.

The British Government maintains foreign commercial agents under two of the governmental departments, namely, the foreign office and the board of trade. Commercial attachés are located at the legations at Paris, Berlin, Madrid, St. Petersburg, and at the consulate in New

York, and the consuls are sometimes detached from their posts and directed to make reports covering special industries or newly opened territories. The British board of trade, which has jurisdiction over shipping, domestic finance, commerce, corporations, and railroads, sometimes overlaps the borders of the foreign office in its promotion of foreign trade. It has sent a government commissioner to South America to make a special inquiry into the conditions and prospects of trade there. It publishes a weekly periodical, known as the Board of Trade Journal, containing matter similar to that in the Consular Reports of the United States, and has recently provided for the publishing of daily advance sheets, in order that they may more readily and promptly be placed before the manufacturing and exporting interests of the country.

In France the ministry of commerce, industry, posts, and telegraphs has, as one of its principal objects, the duty of furnishing to French merchants and manufacturers commercial information of every nature which can assist in the development of markets in foreign countries, as well as in French colonies and protectorates.

In Belgium the diplomatic and consular corps has long been recognized as a highly efficient body of men in the promotion of foreign trade.

Russia has a special department devoted to the interests of commerce and industry, called the department of manufactures and trade, which forms part of the ministry of finance.

The United States Government has, in the State Department, the Bureau of Foreign Commerce, which issues an annual report entitled "Commercial Relations of the United States," and publishes the monthly Consular Reports. Most important of all for the prompt dissemination of the work of the consuls are the advance sheets of the Consular Reports, issued daily since January, 1898, for the convenience of the newspaper press and commercial and manufacturing organizations. This Bureau conducts correspondence with all American manufacturers and exporters who seek the aid of the consular service, and acts as the intermediary between such inquirers and the consuls. This private correspondence often develops information of general interest, and this is promptly furnished to the newspapers through the daily bulletins. In this way the work of the Bureau is highly appreciated by manufacturers, but the meager force of six clerks at present allowed by Congress for its work seriously restricts the range of its usefulness.

Regarding the efficiency of the consular service of the United States in promoting foreign commerce, witnesses before the Industrial Commission have taken the position that the service is not permanent, and that while individual consulates occasionally are of assistance in opening a market for American products, they can not be depended upon to follow it up. It is perhaps true that, with the extension of

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the civil-service regulations to the consular service, this system may be improved and become a permanent organization, with the prospect of continuous promotion for those appointees who excel in the performance of their duties. At the same time it is to be questioned whether the consular service of the United States does not compare in its practical results very favorably with those of foreign countries which are on a more permanent basis of appointment and promotion. The German consuls, for example, are not as well equipped as many American consuls in practical acquaintance with industrial processes, commercial values, or mercantile usages, since their training is required to be that of lawyers and diplomats. Germany has found it necessary to add commercial attachés to certain consulates, as already mentioned, in order to supply the commercial feature of consular work. Plans are being devised, however, in the German service for a corps of consular pupils, selected by competitive examination for their intelligence, energy, and efficiency as students of modern languages, commercial law, and technology, trained by special studies for their career, then sent out to foreign countries to begin their life work as apprentices.[1] In this way it is expected to improve the practical character of the consular service, and yet to secure continuity of employment under civil-service regulations.

The American consular service, while it may be defective in certain points, is nevertheless remarkable for the promptness and energy with which several of the consuls have taken hold of the promotion of the foreign commerce of the United States. Since the establishment of the Bureau of Foreign Commerce in 1897 many of the reports of consuls have been made complete in various technical details, giving the exact information which manufacturers need in order to promote their sales in foreign markets. While in some respects they are not as accurate from a scientific standpoint as the reports prepared more deliberately by English and German consuls, yet many of them excel in promptness and in the practical value of the information furnished. The American consul is not above considering himself in the light of a commercial traveler, and is not afraid that in showing enterprise in this direction he may lessen the dignity of his position.

The Committee on Foreign Affairs of the House of Representatives, in reporting a bill for the reorganization of the consular service, stated that the two great obstacles in the way of the extension of foreign trade through consular aid are "ignorance of the majority of the people of the importance of the consular service as affecting their individual interests," and "the reward for political service that has ingrafted itself on our political parties." The business interests and commercial bodies of the country are alive to the importance of this question, and have urged upon Congress, through resolutions and otherwise, the

[1] Consular Reports, 1899, p. 118.

reorganization of the consular service, after a careful consideration of existing laws and practices, in order that the expansion of the commerce of the country may be effectively promoted. The reports of the Bureau of Foreign Commerce also show the need of an improved consular service, and in the report for 1900 it is stated that, in view of "the more and more strenuous competition which is evidently awaiting us, our manufacturers, exporters, and trade representatives abroad will need to be provided with a variety of information which can not be acquired except by academic instruction."

DEPARTMENT OF COMMERCE AND INDUSTRY.

In each of the European countries which have made special efforts to develop foreign trade, it has been found advisable, as a practical method of operation, to bring under common management the different branches of government having to do with commerce and industry. The board of trade in England, the ministry of commerce, industry, posts and telegraphs in France, the ministry of commerce and national industries in Austria-Hungary, the ministry of commerce and industry in Russia, are departments which include under their management divisions of work which, in this country, are scattered among several departments. In France the minister of commerce has supervision of commerce, arts and manufactures, stock companies, insurance, commercial schools, industrial expositions, pension and savings banks, work of children in factories, weights and measures, industrial property, tariffs, and laws regarding customs duties and treaties of commerce, warehouses and docks, marine fisheries, merchant marine, foreign commerce, commercial information, technical education, and trade and labor organizations. In Belgium the ministry of industry, mines, and labor has charge of factory and mine inspection and of the enforcement of labor legislation, and the supervision of industrial and technical education. In three countries—France, Belgium, and Austria-Hungary—the ministries of commerce and industry are assisted, especially as regards labor matters, by large advisory councils, known as the council or superior council of labor, chosen with a view to securing proper representation of employers and employees, and of the general public as well. These advisory councils are important aids in keeping the department accurately and promptly informed of the needs of labor and capital and enabling it to inaugurate and perfect its plans for usefulness.[1]

In the United States the widespread desire for a department of commerce and industry is evidenced by the testimony of many witnesses before the Industrial Commission, as well as by the introduction of bills for that purpose in the Fifty-sixth and Fifty-seventh Congresses.

[1] See Reports of Industrial Commission, Vol. XIV, p 33; Vol. XVI, p. 224.

only 8.7 per cent of our total commerce was carried by our own vessels.

The year 1900, however, shows some increase in the tonnage of American vessels and the amount of goods carried by them, and there is reason to believe that American shipping has started on a period of recovery after its long depression.

Perhaps the most serious inadequacy is found in the existing transportation facilities between North and South America, and the slowness of increase, or even in some cases the decline, of our trade with South American countries is in part attributed to this inadequacy. Regular lines of steamships plying exclusively between our ports and those of South American countries are almost wholly lacking. A very considerable proportion of our traffic with those countries is carried on by triangular routes—vessels coming from South America to North American ports, going thence to Europe, and returning directly to South America. It has already been seen that our exports to South America are much less than our imports, which doubtless explains in part the lack of direct transportation. The cargoes from the United States to South America are less in value and weight than those coming northward. At the same time it is obvious that our exports to South America might be increased if frequent and regular sailings direct to that continent were established. In the case of our commerce with various other foreign countries as well, the lack of direct transportation facilities is explained partly by the insufficiency of the traffic in one direction or the other, which makes it desirable that vessels should call at intermediate ports to secure adequate cargoes.

The increase in our commerce which might be expected, if direct transportation routes were established in a larger number of cases, may be judged by the effect of the recent improvements in transportation facilities between New York and the western countries of South America. Largely through this influence the exports of the United States to Peru increased to nearly $2,000,000 in 1900, as compared with about $600,000 in 1893. The improved transportation facilities between the United States and Japan have also promoted our trade with that country.

While there is just complaint in some cases of the lack of ocean transportation facilities, the development of such facilities largely follows need. New steamship lines are established and existing lines improved with the demand arising from increased foreign trade. The great increase in domestic production in the United States, providing a surplus for foreign exportation, and the growing interest in foreign trade among American producers and merchants, will beyond question be reflected in more and better means of transportation. If capital sees scope for profitable employment in the handling of American commerce, it will soon flow into this field. Whether because of the greater

expense of building and operating American vessels, some direct Government assistance to the American merchant marine is desirable, need not be discussed here in detail. It may, however, be pointed out that, should the policy of ship subsidies be decided upon, the aid should be so adjusted as to benefit the various interests in the country as widely as possible. Subsidies, if granted, should be so distributed as to favor the establishment of new transportation lines where such lines are really needed. They should favor the kinds of vessels which will best serve our commerce.

BANKING FACILITIES AND CREDITS.

Exporters of American products assert that they are hampered in many cases by the lack of adequate banking facilities in various countries, and by the fact that German and British exporters are usually more willing to grant long credits than those in the United States. It is stated that, in South America especially, practically all of the banks and financial institutions have been established by European capital and are controlled by Europeans, particularly English and Germans. On this point, the New York Journal of Commerce said editorially in January, 1901:

> The control which British and German merchants have long retained over trade with South America, in the face of appeals to Pan-American patriotism, elaborate conferences, and advice by United States consuls how to win the southern market, has long afforded a striking example of the power which comes from control over the agencies of credit. Foreign banks financed in London have power to use their credit much as they please, to issue circulating notes under local conditions, and to keep only such reserves as sound banking policy suggests. These unfettered powers and the possession of large capital have enabled them to grant long credits, sell exchange upon favorable terms, and to offer accommodations to their international traders which could not be offered by Americans to theirs.

It is stated also by witnesses that European firms engaged in export trade frequently grant credits of from 6 to 12 months, and that in many foreign countries dealers expect such long credits. The Latin races, in particular, are said to prefer to do business on long-time payment. American producers, being accustomed to prompt payment in their own country, are loath to grant such long credits to those abroad, particularly since, on account of the lack of banks and of agencies directly under American control, they are less certain of collecting their accounts than other exporters.

The establishment of American banks in leading foreign trade centers, particularly in countries where credit facilities are least developed, is often advocated. It has been suggested that a Federal law should be passed providing for the incorporation of such banks to do business abroad. It is obvious that any new institution of this sort is likely to find difficulty in securing a permanent foothold in competition with the already strongly established banks controlled by Europeans.

At the same time the great increase in American foreign trade seems to offer the promise of a profitable business for those who may establish credit institutions for accommodating that trade.

DIRECT EFFORTS OF EXPORTERS TO PROMOTE FOREIGN TRADE.

While much may doubtless be done by the Government to promote the development of our foreign commerce, and while the establishment of better transportation and credit facilities would have a powerful influence in this direction, the chief reliance for the extension of American export trade must be the direct efforts of American producers. It is often asserted, and the assertion seems to be well founded, that Americans are less skillful in pushing the sale of their products in foreign countries than are the merchants of European nations, particularly Germany. The great development of American exports is attributed rather to the superiority of the products themselves than to skill in selling them. The institutions for commercial education in Germany have been highly developed, and German exporting houses secure the services of men thoroughly familiar with the conditions of foreign trade, the needs and prejudices of the people of various races, and the best methods of promoting the sale of products. Special attention is given to advertising in foreign languages, and to the use of those languages by agents. It is probable that American exporting houses have less efficient service in these directions, but the growing interest which is being taken in the subject of commercial education promises improvement.

The most successful exporters of American products have found it desirable to establish permanent agencies in leading foreign markets, and to push the sale of their goods directly. Such permanent agencies are able to adapt themselves to local conditions, to watch for favorable opportunities, to advertise by suitable methods, and to give more earnest attention to the extension of trade than can be expected from mere commission agents or from traveling salesmen.

It is especially necessary to the success of export trade that regard should be given to the conditions and the tastes of the peoples to whom goods are sent. The styles must be adapted to the habits, notions, and prejudices of the inhabitants and to their stage of civilization. This is, of course, especially true in the case of trade with the more backward countries of the world. In some cases the customs or the superstitions of the peoples of these countries are such that goods made and packed in the ordinary American methods would be altogether unacceptable. Again, goods must be packed with a view to the methods of transportation and of sale which are customary in the countries to which they are sent. For example, as is stated by witnesses, some goods sent to South America and other countries have to be carried on the backs of pack animals before reaching their desti-

nation, and the packages should be, but often are not, adapted to this purpose. The English are somewhat disposed to continue long-established practices without, perhaps, sufficiently adjusting themselves to changes in the demands of foreign countries. The Americans are often inclined to consider anything produced by American industry superior by its very nature, and to expect that the foreign buyer will appreciate this superiority. The Germans, on the other hand, are peculiarly skilled in adapting their goods and their methods of dealing to the characters and tastes of foreign races.

It is most important to the permanent prosperity of American foreign trade that the high quality of goods, which has, in many cases, been the chief attraction to the foreign buyer, should be maintained. There should be no dumping of inferior products upon the foreign consumer. Goods labeled "made in America" should more and more gain the reputation throughout the world of representing the best of workmanship and the most perfect adaptation to needs.

V.—COMMERCIAL AND INDUSTRIAL EDUCATION.

Commercial and industrial education need to be considered in their two aspects; their relation to education, in the broader sense—the development of the individual—and their relation to particular commercial or industrial pursuits. In the latter direction such training may prove of service to business men and employers, and to the general public, as well as to the workers and employees directly receiving instruction.

Only a very small fraction of the people feel able to pursue a purely literary or liberal course of culture beyond the years of childhood. Any education that is to attract the mass of the people after these years are past must have a direct and evident bearing upon the activities of adult life. Whether such training takes the commercial or the industrial direction, it is not necessary to neglect the general training and development of the individual. On the contrary, both manual or industrial work and commercial training may be made liberalizing and educating if they are offered in the right way and with the proper accompaniments.

The training of the hand and the eye will be pursued by different methods according to the object chiefly in view. In the first place, general education may be the chief or the exclusive purpose. The hand and the eye may be trained, not with the idea of developing skill in any particular manual calling, but for the purpose of completing the all-round development of the pupil. On the other hand, the effort may be made to give a more or less complete and practical knowledge of some particular trade. The efforts directed to the former end are

more properly included under the head of manual training. Those directed to the latter end belong more strictly to industrial education.

While the development of manual dexterity and industrial skill are highly important, they ought always to take a secondary place in school work. Precedence should be given to a broader and more general training. A truly educative process throughout the period of childhood is of the first importance, even for the increase of purely industrial efficiency. The general intelligence of American workmen contributes not a little to their superior productivity. One of the foremost Swiss manufacturers is quoted as saying that the Italians are preeminent among the workmen of Europe in their natural endowments, and the French come next, with all the northern nations, English and Teutonic, in a lower place; on the other hand, the English workmen stand first in special technical education for their particular crafts; but for general service the men of Saxony and Switzerland are best of all. The reason he gives is that they have received a very careful general education, which has developed a power of comprehension beyond the limits of a special occupation, and has fitted them to undertake any kind of business after a brief preparation.[1]

COMMERCIAL EDUCATION.

There used to exist in the older countries a system of training of young men in the great business houses, comparable with the system of apprenticeship in the mechanical trades. This system in its full development was never established thoroughly in the United States, and it has now broken down, like the apprenticeship system in the trades, even in England, France, and Germany. There seems to be an increasing feeling in those countries that the only possible method of developing thoroughly efficient and trained men of business is through commercial schools.

Such schools can impart much of the knowledge that a business man ought to have in a fuller and more connected way than it can be picked up, even in the best business office. They will not attain the highest utility, however, if their utilitarian purpose is too narrowly conceived. Breadth of development is even more valuable to the apprentice in commerce than to the apprentice in a manual trade. A commercial education should include good courses in commercial law; in commercial geography, with special emphasis on the climatic conditions, the products, and the commerce of our own country; and in economics, including something of economic history. There should be a development of the principles of business ethics.

[1] Report of the Commissioner of Education, 1899–1900, p. 757.

BUSINESS COLLEGES.

The business colleges of the United States are private institutions, supported by the fees of the students, and usually run for profit.

At least one business college still exists which was established in 1840. By 1870 twenty-six such institutions made reports to the Bureau of Education, and the number in existence was no doubt greater. These 26 schools had 5,824 students. In 1880 the number of schools had increased to 162 and the number of students to 27,146. In 1894, 518 schools reported, with 115,748 students. From this time, however, there was a rapid falling off. In 1899 only 320 schools reported, and their students were only 70,186. This decline is due partly to the business depression, but partly, no doubt, to the increasing number of commercial courses in public high schools and in colleges and academies. These courses are often superior in many respects to those offered by the majority of the business colleges.

In the early years of business colleges, the teaching was substantially limited to bookkeeping, arithmetic, penmanship, and business forms. Stenography and typewriting were added later, and the demand for stenographers and typewriters was perhaps the chief cause of the rapid growth of the schools. The courses of study are usually short. The time necessary for graduation in the day courses is often six months, usually not more than ten, and in a few cases as few as three or four. The evening courses usually require ten or twelve months or more for graduation, but may sometimes be completed in as short a time as six months.[1]

COMMERCIAL COURSES IN SECONDARY SCHOOLS.

Of the 167 public normal schools which reported to the Bureau of Education in 1897–98 only 19 had business courses. There were business courses in 88 of the 178 normal schools reporting, which were not supported by public funds. Such courses were taken by 5,721 students in all. In 1898–99, 105 schools of both kinds reported business courses, with 6,126 students (4,023 male and 2,103 female) in them.

Six hundred and fifty-three private high schools and academies, out of nearly 2,000 which reported to the Bureau of Education in 1897–98, had business courses, which were taken by 9,740 students. Only 40 of the 653 schools had as many as 30 students each in commercial courses. In 1898–99, 670 such schools reported 10,609 students (7,136 male and 3,473 female) in commercial courses.

The Bureau of Education received reports from 5,260 public high schools for the years 1897–98. Of these 1,018 had commercial or business courses, which were taken by 31,633 students. In many of these

[1] Reports of Commissioner of Education, 1897–98, pp. 2441, 2463–2477; 1898–99, p. 2174.

schools the last year's course is devoted largely to commercial studies, while in many others such studies are distributed through the whole course of four years. Only 139 of the public high schools had 50 or more commercial students each. In 1898–99, there were 38,134 pupils, nearly half of whom (18,737) were girls who took business courses in 1,064 public high schools.

In many of the larger cities business men and school superintendents have made earnest efforts for the establishment of separate commercial high schools, with courses of four years, comparable with the regular 4-year course of the existing literary high schools. These efforts have not in any case been entirely successful. The city of Washington is the only place which has a separate business high school connected with the city system of schools and wholly supported by public funds. The Business High School of Washington was established in 1890. Its course, however, covers only two years. In other cities business courses are established in connection with the regular work of the literary high schools. In some cases, as in Philadelphia and in the borough of Manhattan, New York, the commercial courses cover four years; elsewhere, as in Brooklyn, only two years.

HIGHER COMMERCIAL EDUCATION.

The Wharton School of Finance and Economy, of the University of Pennsylvania, was the first institution in the United States to offer a course of study comparable with the regular collegiate course, and specializing in the subjects which are most important to thorough training for business and citizenship. In the fall of 1898 both the University of California and the University of Chicago established colleges of commerce, with four-year courses, parallel with the curricula of colleges of general culture. Emphasis is laid on economics and economic history, geographical studies, technological studies relating to the materials of commerce and to transportation, and studies in history, politics, and law. The University of California said in its announcement: "This college is intended to afford an opportunity for the scientific study of commerce in all its relations, and for the higher education of business men and of the higher officers of the civil service." Several other universities have lately established, or are about to establish, much more elaborate commercial courses.

In the academic year 1897–98, 172 colleges, including 11 State institutions, offered commercial or business courses. The number of students in these courses was 5,869. In 1898–99 the number of colleges was 191, and the number of their students in business courses was 6,463. With a few exceptions, these commercial courses include little more than bookkeeping, commercial arithmetic, commercial geography, commercial law, and stenography and typewriting, in connection with an English course of study covering about two years.

COMMERCIAL SCHOOLS IN EUROPE.

There are commercial schools of three kinds in Germany, Austria, and Switzerland—elementary, secondary, and higher. The elementary are found in connection with the so-called continuation schools in cities. There are evening and secular Sunday classes. The secondary are mostly day schools. Two hundred and forty-seven of them existed in Germany in 1895, though there were fewer than 30 in 1871. Of the higher institutions there are only one or two in Austria, three or four in Switzerland, and about half a dozen in Germany. They are meant to train commercial leaders.

The German commercial schools have come into existence through the initiative of boards of trade in commercial centers. They were at first private schools, but the communal governments have in many cases made them city schools, and the State governments have granted them subsidies. They are not subject to any uniform regulations.

Some of the most successful European commercial high schools have been established by private enterprise. Such institutions have been highly successful in Paris, Vienna, and Turin. In other cases, boards of trade, chambers of commerce, trade leagues, and similar bodies have established such schools. These great commercial high schools set distinctly before themselves the educational as distinguished from the directly utilitarian purpose. Those of Vienna, Prague, Leipzig, and Paris provide for three years of study, while our commercial colleges often let their students through in six months.

At the same time, very little provision has been made in Europe for commercial education which could be characterized as of college or university grade, and could be compared, for instance, with the opportunities offered by the University of California or the University of Chicago. Such opportunities for really higher commercial education have been limited to one-year courses, for graduates of gymnasia, offered in a few places, as Vienna and Venice. In recent years, however, the subject of higher commercial education has received increased attention, especially in Germany. The "German Society for Commercial Education," formed in 1895, has been active in the matter. The first institution in Germany for higher commercial education was established at Leipzig in April, 1898, and another was established at Aachen, in October, 1898.[1]

MANUAL TRAINING.

Public appreciation of the value of manual training is rapidly increasing in the United States. Several witnesses before the Industrial Commission have emphasized its importance in developing the faculties of children, and its economic value in increasing their aptness at mechan-

[1] Conrad, Handwörterbuch der Staatswissenschaften, Vol. IV, p. 603.

ical pursuits.[1] The director of the New Bedford Textile School, however, regards manual training as "to some extent a waste of time." Students who have been through manual training schools are somewhat better prepared to profit by the instruction of his school, but not enough better to pay for the time the manual training has taken. He would think the time better spent in studying the arts and sciences.[2]

The number of public schools in which manual training is undertaken as a branch of general education is rapidly increasing. In 1890 only 37 cities of 8,000 population and over were reported which made manual training a part of their public school instruction. The number increased to 95 in 1894, to 146 in 1898, and 170 in 1899. Ninety-seven of those reporting in 1899 are in the North Atlantic division and 48 in the North Central division, leaving only 25 in the remainder of the country.

One hundred and twenty-five manual-training schools reported statistics to the Commissioner of Education for the school year 1898–99. One thousand and seventy-seven teachers give training in these schools, and 38,621 pupils, of whom 23,002 are male, receive such instruction. Over 17,000 pupils were in the North Atlantic States, nearly 13,000 in the North Central. The Western division had 5,250 pupils; the South Atlantic, 2,366; and the South Central, 954. Schools connected with the public-school system, as well as schools otherwise supported, are included in the list, so far as they are primarily devoted to manual or technical instruction.

In nearly all these schools a large place is given to both freehand and mechanical drawing. The variety of occupations in which instruction is given is very great. Among the most common are clay modeling, carpentry, wood turning and wood carving, pattern making, forging, molding (metal), and machine-shop work; and for girls sewing and cooking.

The great majority of the schools referred to are manual training rather than trade schools. They are meant to contribute to the general development of the pupils rather than to give them an immediate industrial efficiency. In a few cases, however, the attempt is made to turn out practical workmen. The New York Trade Schools teach, with this end, carpentry, electrical work, plastering, steam fitting, forging, sheet-metal work, plumbing, bricklaying, printing, and house, sign, and fresco painting. Spinning, weaving, dyeing, and textile designing are taught in several textile centers.

MANUAL TRAINING IN EUROPE.

Manual training is much less practiced in the elementary schools of Germany than in those of the United States. The idea of introducing

[1] Reports of the Industrial Commission, Vol. VII, pp. 61, 65, 66, 231; Vol. XIV, pp. 87, 353, 358.

[2] Reports Industrial Commission, Vol. XIV, p. 554.

it there seems to meet with comparatively little favor. A great deal of manual instruction is given, however, in the so-called continuation or supplementary schools. These are intended to cover three years of the student's life, from the close of the period of elementary instruction, which is supposed to be the fourteenth year of age, to the seventeenth year. A large proportion of the minor German States have given more attention to continuation schools than Prussia; the courses of instruction differ widely; many of the schools, especially those in rural districts, merely carrying on the literary and general training which has been begun in the elementary schools, while others, including the most of those in the towns, devote themselves largely to preparation for industrial life. Instruction is given, not only during ordinary day school hours, but also, to a very great extent, in the evening and on Sundays.

Manual training was made obligatory in all primary schools in France in 1882, but comparatively little actual progress has been made in developing it in them. Several large towns established school workshops for carpentry, turning, and ironwork, when the law of 1882 was passed, but the experiment proved a failure. It was found that boys were, as a rule, incapable of handling a file or a chisel before the age of 12 or 13 years. The official regulations of 1887 contemplate workshop instruction only for the higher course—11 to 13 years—in primary schools, and this course is organized in only a few town schools.

In 1897 Paris had 185 elementary schools, of which 88 had woodwork, 32 both wood and iron work, and 65 neither. In these cases the manual work is strictly supplementary to the general education. In the École Salicis—one of the most completely organized—manual work occupies twelve and one-half hours a week in the highest division, six hours in the middle division, and five hours in the lowest or elementary division. In the lowest division the work is cutting and weaving paper; in the middle division, wood and iron work, modeling and making sketches, are included, and the same work is developed in the highest division.

Manual training has received a very high development in Sweden, under the name of sloyd; and the name, with more or less of the Swedish system, has been copied somewhat extensively both in Europe and in the United States.

INDUSTRIAL TRAINING.

APPRENTICESHIP.

Industrial education may be understood to include all direct instruction in the practice of particular trades, as far as it is chiefly intended to promote trade skill and efficiency. The argument for it rests on somewhat different grounds from those which make manual training

seem desirable. The purpose of education, in the broader sense, need not and should not be lost sight of in trade instruction; but it is a subordinate purpose. The need of formal methods of industrial instruction depends either on the need of specially trained leaders—foremen, superintendents, and the like—or on the difficulty of acquiring an adequate knowledge of a trade in the actual practice of it.

In the days of smaller business units, the manual trades were acquired, as a matter of course, by the system of apprenticeship under the immediate charge of a master of the craft. The conditions of modern industry have practically destroyed this system, not only in the United States, but in the other industrial countries as well. The mutual binding of apprentice and master by a written indenture, formerly so general, has almost ceased. Boys are taken into shops, not as apprentices, but as helpers. They get no more instruction than is necessary to make them immediately useful from day to day. It is hardly possible to learn a trade in a great modern establishment. "Nowadays the apprentice commonly learns under a master who practices but a part of a trade, and he himself is taught only one portion of that part."[1] One witness before the Industrial Commission declared in terms that the apprenticeship system is now worthless and impracticable, and that no effort ought to be made any longer to maintain it.[2]

The maintenance of the apprenticeship system is still desired by the trade unions,[3] and the idea of substituting school instruction for shop practice seems to have made no great headway among employers. One large employer described to the Commission the system of formal indenture, which his company still maintains. The indentured apprentices are especially trained to become inspectors and foremen.[4]

It is recognized by the French school authorities that no school training, however careful, can fully take the place of practical shop work. There is a tendency in the school to over-elaboration and indifference to the element of time. The French system of apprenticeship schools is based, however, on the frank recognition of the fact that trade apprenticeship in the older sense of the term is extinct.

Several German States have given attention to maintaining the training of apprentices in workshops. Subsidies have been paid in Baden, and also in Switzerland, to masters and shopowners who would undertake the work of training apprentices. In Switzerland it is customary to subject apprentices at the completion of their terms to examination

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[1] Sylvanus P. Thompson, F. R. S., in International Congress on Technical Education, London, June, 1897; Report of Proceedings, p. 142.

[2] Reports of the Industrial Commission, Vol. VIII, pp. 105, 106.

[3] See p. 809, below.

[4] Reports of the Industrial Commission, Vol. XIV, pp. 351–352. See also Vol. VII, p. 325.

by a public authority. In some cantons the examination is compulsory. The system of examinations is uniform throughout Switzerland, and is under the direct charge of the Swiss Industrial Society. The examination includes practical tests in shop work, and questions both in the technique of the trade and in the ordinary school studies. In Baden and in Hesse also there are apprentice examinations regulated by the State.

Neither the partial payment of the cost of training apprentices from public funds, nor official tests of the thoroughness of their training, seem to be practicable in our country at present. It appears not impossible, however, for employers to provide for the thorough trade instruction of a certain number of youth, with gain to themselves as well as to the apprentices. This becomes more practicable with the growth of business establishments which have the character of great permanent public institutions. The Midvale Steel Company finds its account, its president thinks, in the friendship of young men whom it has trained, even when they leave it and devote their service to other companies.[1] Still more evident is the gain to a great establishment in the possession of a force of carefully trained apprentices from which to recruit its own staff.

Aside from these considerations, however, it might be practicable for employers, if they were willing to give real and careful instruction in their shops, to make arrangements with pupils who would appreciate such instruction, under which it would be directly paid for. The payment would normally be obtained by paying the apprentice less wages in the last part of his time than his work would be worth. It is only in the last part of the term that the services of the apprentice could be of considerable value. To discourage him from abandoning his place before his term is finished, some part of his wages throughout the whole term might be withheld until the end.

The eagerness to earn something quickly is one of the great obstacles to the maintenance of an apprenticeship system, and the difficulty on this ground would be aggravated by holding back wages. But the same difficulty stands in the way of any plan for devoting time to careful training. Every such plan involves a sacrifice of present earnings for the sake of increased efficiency in the future.

The peculiar difficulty of the apprenticeship system is that, as the boy approaches the end of his term and begins to produce nearly as much as a journeyman, it seems to him unjust that he should not receive nearly a journeyman's wages. It is hard for him to remember that he is now paying his employer for his industrial education. This sense of injustice was one of the great causes of the proverbial idleness of apprentices, and it may perhaps be an insuperable obstacle in

[1] Reports of the Industrial Commission, Vol. XIV, p. 351.

the way of a general revival of the apprenticeship system in any form which does not permit the fixing of the apprentice's wages in somewhat close correspondence with his productiveness.

INDUSTRIAL SCHOOLS.

It is industrial education in the stricter sense which is especially felt to be needed for the strengthening of the industries of the country in international competition, as well as for general progress in quantity and quality of production. Many witnesses before the Industrial Commission have called attention to its importance in both these aspects. The superiority of the opportunities for industrial education on the continent of Europe is repeatedly emphasized.

The president of the National Association of Manufacturers testified that an American who had taken a three years' course in textile coloring in Germany, and then had taken charge of the dyeing and finishing in a large American textile establishment, visiting Germany after ten years, declared that the improvement of methods in a factory with which he was familiar had been so great that he would not have known that he was in the same establishment. He attributed the remarkable advance to the filling of all positions with trained experts from the industrial schools.[1]

The number of efficient trade schools in the United States is not great, but some of them are believed to be as efficient as any in the world. The New York Trade Schools are devoted chiefly to the building trades, and the practical effectiveness of their instruction in the art of bricklaying has been testified to by an experienced employer before the Industrial Commission.[2] This establishment was founded in 1881 as a private enterprise, and has been maintained at a considerable annual loss to the founder. The annual attendance is between 500 and 600.

More important, at least from the point of view of international trade, are such institutions as the School of Industrial Art at Philadelphia. It was opened in 1877, and was at first a school of drawing only; but a textile school was established in connection with it in 1884, and has become its principal feature. There is a school of carving, and modeling is taught with reference both to architectural ornamentation and to pottery. Designing is also taught in its application to surface decoration and to printing on papers and textures of all kinds; and instruction in leather work as applied to bookbinding is also given. In the textile school thorough instruction is given in weaving, in dyeing, in designing, and in the choice and use of materials. The school appeals to two distinct classes of pupils, one in the day classes and one in the evening classes. The evening classes are composed largely of working men and women actually engaged in the mills,

[1] Reports of the Industrial Commission, Vol. VII., p. 130.
[2] Reports of the Industrial Commission, Vol. VIII, p. 106.

usually in positions of some responsibility, as foremen or as draftsmen. The day classes are composed almost exclusively of young men and young women, largely those of good family and education. The course in the day classes covers three years, and the student acquires a very thorough technical knowledge of such branches of the textile industry as he specializes on.

The School of Industrial Art is supported partly by appropriations from the city of Philadelphia and the State of Pennsylvania. The Lowell and New Bedford Textile Schools have in like manner been aided by the city authorities of New Bedford and by the State of Massachusetts.

These schools, at least in their day classes and their more thorough courses, are designed rather for the leaders of industry, the foremen and superintendents, than for the rank and file. The opportunity for such schools is necessarily limited, because the number of leaders required is relatively small. There is no limit to the opportunity for the establishment of schools in which the ordinary day workers, or at least the higher ranks of them, may increase their knowledge and their technical efficiency.

These schools of lower grade, for the wage-earner, increase his resourcefulness, both by broadening his empirical knowledge and by providing a rational basis for it. They can give a valuable preparatory training to the youth who have not yet taken up their callings; and they can supply deficiencies in the knowledge of those who are already at work. It is for the latter purpose that evening classes are particularly necessary.

It has been said that trades can never be learned in a school, but that they can not be properly learned without a school. Workmen who have had school training, involving some elementary knowledge of theory, and such application of theory as the conditions of a school make possible, should be more efficient than those who have gained all their knowledge in the shop; but the school is the complement of the shop, and can not take its place. Both are needed for a complete industrial training.

The industrial value of technical education for the rank and file varies greatly in different occupations. In the chemical industries, for instance, nearly all the work is done by mere laborers, whose efficiency would be very slightly increased by any instruction in the theory of their work. The progress and the success of such an industry depend upon the skill of a few superior officers. In the machine-building trade almost every workman can do more and better work if his knowledge of the trade is increased.

INDUSTRIAL EDUCATION IN EUROPE.

France was the first country in which deliberate industrial education was introduced. The beginnings of it there were due to Colbert, the

great minister of finance under Louis XIV. The admitted superiority of the French people in many lines of production, particularly in the more artistic manufactures, has often been attributed to the French system of industrial training. The international expositions of 1851, 1855, and 1862 convinced the people of England, Germany, and Austria that they must adopt similar measures for the promotion of their own skill. The South Kensington Museum, with its art schools, founded by Prince Albert in 1857, was the first great product of this conviction. Some 35 schools of industrial art have been established in Germany, Austria, and Switzerland since 1868.

There are three schools at Paris which teach decorative art and its direct application to industry. Instruction is given in decoration as applied to architecture and furniture, in painting on porcelain, in sculpture in wood, stone, and marble, in theatrical and domestic decoration, and in textile designing. It is found that boys fresh from school do not work fast enough to be very profitable commercially. At the same time fear of competition makes the actual trade workers unfavorably disposed to the schools.

A French law of 1892 provided for the establishment, under the minister of commerce and industry, of schools designed to instruct and train clerks and workmen whose services can be at once utilized in the countinghouse and the workshop. Ten such schools of industry, and 11 combined schools of industry and commerce, besides one exclusively commercial, had been established up to December, 1897. In the schools of industry from thirty to thirty-three hours of workshop or manual work per week are given, out of a total period of instruction of from forty-six and one-half to fifty-one hours, exclusive of nine hours allotted to the preparation of lessons. These schools are admittedly based on the need of forming a new class of apprentices and workmen, in view of the complete collapse of the apprenticeship system.

France has also three national technical schools. opened in 1886 and in 1887, which are designed to give a complete industrial education, beginning with the earliest age of school attendance. Each includes an infant school, receiving boys between 3 and 7 years old, as well as an elementary school and a higher elementary technical school. Some manual work is given from the first. Work in the shop begins at 12 or 13 years of age. At the beginning of the second year a special branch or trade is selected, and the work of the rest of the course is specialized with this in view. Notwithstanding this specialization, the best pupils seem to require a year or two of practical shop work before they can be considered masters of their crafts. Instruction in the schools is gratuitous. A considerable number of the pupils are boarders, and pay 500 francs a year for board.

The public industrial education of Germany is provided in schools

of three general sorts: First, the continuation or supplementary schools; second, schools of design for the industrial arts; and, third, purely trade schools. Each of these schools is specially designed to aid the particular community in which and by which it is established. The State does not establish them, though it contributes to their support. They form no uniform system. No two have the same course of study.

The schools of the first class, the continuation schools, have already been referred to in discussing the development of manual training in Europe. These schools, however, in addition to the elementary work which they do for young pupils, do also a great work in supplementing the industrial training of adults who are already engaged in trades. When a workman feels that he would be helped by a course of instruction in drawing, or in any other branch which is offered in a neighboring continuation school, he goes there, pursues the particular course he wants, and drops out again.

The schools of the second class are meant as nurseries of invention and design. They are found only in the large industrial centers. Three-fifths of their time is given to drawing and mathematics. There are both day and evening classes. They rarely have workshops. The most of the students are apprentices or journeymen, and can make models at home or in the shop after designs made in school.

The third kind of schools, the purely trade schools, are intended to directly aid the trades by shortening the period of apprenticeship and developing skill in manual labor. These advanced trade schools are found in industrial centers only. They are established by the communities and subsidized by the State.

There are also foremen's schools, which offer to young and old laborers the opportunity of gaining in the shortest possible time such technical knowledge and ability as can not well be acquired in practice or in an industrial continuation school, but which is indispensable for a foreman or a self-dependent manager.

No institutions have contributed more than the German textile schools to the world-wide reputation which German technical education has obtained. There are six so-called higher weaving schools in Prussia, designed to prepare factory owners and superintendents. That at Crefeld is perhaps the most celebrated. It has extensive chemical laboratories—for experiments in dyeing, as well as for instruction—physical laboratories, designing rooms, and a great variety of weaving machinery, intended, indeed, to present every kind of loom in use in the world. In the weaving school proper there were in 1897 108 regular day students, while about 250 weavers and others employed in the mills attended on Sunday for drawing and lectures.

At the school for spinning and weaving wool, at Aix-la-Chapelle, a considerable number of regular workmen are employed, who instruct

the 60 students and are at the same time assisted by them. The conditions are, so far as possible, those of a regular factory. At Crefeld, on the other hand, the students do all the work, under the direction of two weaving and two dyeing masters.

SCHOOLS OF TECHNOLOGY.

The school of technology differs from the schools heretofore spoken of, as the college or the university differs from the primary and the secondary school. It is a place of liberal education, both general and technical. Its work is to train the line officers of the industrial army and the scientific leaders of technical progress. Its importance, therefore, is out of all proportion to the number of its students. In some of the lower branches of industrial education the United States lags behind Germany and France; but it is believed that no better facilities can be found in the world, for the highest and broadest technological training, than exist in the United States.

The first technological schools in the world were the École des Ponts et Chaussées, established in 1716, and the École Polytechnique, in 1794. No higher institution of technology in any country but France is older than the nineteenth century. That at Prague, the next in age, was established in 1806. Austria now has 6 such institutions; Germany, 9; Switzerland, 1, and Russia, 1. The 9 German schools had 10,813 students in the winter of 1898–99, and the 6 Austrian schools 4,452.[1]

Forty-three American institutions, classified by the Bureau of Education as schools of technology, reported to the Bureau in the academic year 1898–99. The greater number are primarily agricultural colleges. The 43 institutions had 8,858 male students and 1,279 female students in their collegiate departments, besides 180 male students and 60 female students in their graduate departments. The most important institution of the kind is the Massachusetts Institute of Technology, with 1,124 male students and 47 female students. The list does not include the very important technological departments of such institutions as Cornell University and Columbia University.

The subject of manufactures, trade, and commerce is closely connected with that of industrial combinations. The report and recommendations of the Commission on industrial combinations and the report on labor, which includes a review and recommendations regarding labor employed in manufactures, trade, and commerce, follow.

[1] Conrad, Handwörterbuch der Staatswissenschaften, Vol. IV, pp. 606, 607.

INDUSTRIAL COMBINATIONS.

The tendency to consolidate competing establishments in various industries has been so pronounced in recent years as to create much apprehension of monopoly. One of the most noticeable effects of the legislation against the so-called trusts has been to drive the corporations wishing to combine from the old forms which often contained the seeds of disintegration, into the new form of a single large corporation. Apparently the methods of consolidation have been strengthened and improved. The economic advantages of combination, and the apparent success of most of the new companies, have led many of the ablest business men and economists to the conclusion that the combinations have become an established factor in the industrial life of the nation. Not all of the problems, however, have been worked out, and it remains to be seen whether or not the new companies are as safe for investment as the old, and whether or not the public interest is in any way endangered by them.

Without going into a discussion of the question as to whether or not combination under public supervision is better for the people than injurious competition, it has seemed to the Industrial Commission pertinent to trace the evolution of industrial combinations and the progress of legislation aimed to prevent trusts or avert their evils and dangers, to the end that such changes in public policy may be recommended as the newest conditions suggest. It is assumed that the people desire to preserve and will preserve laws to protect the public from all the dangers of conspiracy and extortion, while at the same time they desire to promote and will promote the most scientific and economical methods of business.

DEVELOPMENT OF COMBINATIONS.

In all countries and in practically all times, whenever business has developed so that competition has become somewhat severe, it has been customary for dealers to make agreements, more or less formal, in order to maintain profitable prices. In many cases, without formal agreements, local grocers, butchers, dry goods dealers, and others, from noting the prices set by one another, gradually evolve a cus-

tomary price for most articles of merchandise. In order to secure business it is usual for each competitor to make from time to time "leaders" of some few articles, and to cut prices on those articles down to unremunerative rates, in the hope that by so doing customers may be attracted to the establishment, and profits made from the sale of other goods on which the customary rates are maintained. Any decided lowering in prices of many articles is likely to precipitate a competitive "run," which eventually results in the destruction of one or more of the rivals, or in some form of agreement to put prices back to reasonable rates and maintain them. Such informal agreements are probably less frequent among manufacturers than dealers, but even here they exist. The sharper the competition, the more likely are agreements to be formed.

POOLS AMONG MANUFACTURERS.

Until after the close of the civil war business in the United States was so much localized, on account of the lack of facilities for transportation and the relative smallness of the capital invested, that no large combinations were made.

The rapid development of business in the years following the war, together with the artificial stimulus given to certain lines of industry, either by internal-revenue legislation, as in the case of manufacture of spirits, or by the special demand created by the war itself and by the reaction following it, led to several combinations of a wider reach. The spirits business especially had attracted very large sums of capital, and the producing capacity had become far beyond that required to meet the country's normal demand at reasonable prices. The result was cutting of prices, in order to dispose of the surplus stock, so that the business often became unprofitable. To avoid this the manufacturers met from time to time, and entered into agreements to limit the annual output to a certain percentage of the producing capacity of the various establishments. At one time this limit was placed at 40 per cent; at another time even as low as 28 per cent. In another instance, in order to remove the surplus stock from the market and to enable the various companies to make their domestic sales at profitable rates, an assessment was levied upon each distiller entering the combination, to raise a fund to pay for the exportation of the surplus stock at a loss.

These pools in various lines of business, including agreements upon output and prices, were found to be in each case only temporarily effective. Whenever prices were remunerative, each competing manufacturer naturally found it desirable to extend his sales, and the agreement was likely to be broken.

The application by the courts of the common law regarding restraint of trade also tended to weaken these pools. Under the common law, both in England and in this country, contracts in restraint of trade

have been held invalid. It is true that, when the limitation has covered only certain sections of the country or short times, contracts in partial restraint of trade, if considered reasonable, have been regularly upheld by the courts.

For short periods these pools and other forms of price and selling agreements were very common.

RELATIONS OF COMBINATIONS WITH RAILROADS.

In the sixties, refiners of petroleum found that competition among themselves was lessening their profits. In the next decade an important group of them, under the leadership of Mr. John D. Rockefeller, had reached certain understandings regarding output and prices, which made competition in that industry less severe.

During the seventies and eighties railroad consolidation had not taken place to any great extent, but the various lines usually competed vigorously for traffic to and from common points. The railroads, like some of the manufacturing industries, had found excessive competition unprofitable, and often ruinous. They, therefore, entered into various understandings, providing for a division of traffic, and in some cases for a pooling of earnings on agreed percentages.

Large shippers, through the desire of railroad managers to secure traffic, often succeeded in obtaining special concessions. At competing points it was the rule rather than the exception that the large shippers received either special rates or rebates from the published rates. Among the most active of such shippers favored by rebate arrangements was the Standard Oil Company. The practice was begun by other oil companies preceding it, which were organized and managed largely by the same men who afterwards became so prominent in connection with the Standard Oil Company. The Standard and these earlier companies not only received rebates upon their shipments over certain lines of railroad, but, in some instances, were paid a percentage upon all shipments of oil over the road, including even those of their rivals. In return for these favors given by the railroads, the Standard Oil Company rendered certain services, both by providing special facilities to the railroad for its shipments, and by acting as an evener in connection with some of the railroad pools; that is, when several railroads had agreed upon a division of traffic, this company, by virtue of its large shipments, could turn its traffic from month to month to either one road or another as occasion required, in order to give to each road its proper percentage of shipments.

Whatever the services rendered by the Standard to the railroads may have been, it is clear that they were performed at comparatively little, if any, additional expense to itself, and that it derived so great an advantage therefrom, that its rivals found it impossible to stand in the face of competition of this nature.

TRUST AGREEMENTS AND SUBSEQUENT CONSOLIDATED CORPORATIONS.

The managers of the Standard Oil Company of Ohio and of other companies associated with it, found that pools and ordinary forms of agreement regarding prices and output did not give sufficient power over the various members, either to control the market or to secure the most efficient methods of production. In consequence this company first devised and put into effect the so-called trust agreement, by which numerous individuals, firms, and corporations, formerly competitors, were brought together in 1882 into the one Standard Oil Trust. The trust was organized substantially as follows: A board of nine trustees received in trust from each of the different parties to the agreement, either an assignment of stock with full voting power, or in some other way the absolute control of the management of the separate properties. The trustees issued in return for these assignments, or other controlling power, trust certificates representing the respective valuations of the plants. All the properties were then managed by these nine trustees in complete harmony. The profits were distributed among the holders of the trust certificates as if they were dividends on stock, independent of the question whether the original property, for which one had received his trust certificate, was making profits or was idle.

This success in harmonizing divergent interests in the oil-refining industry led to similar arrangements in other industries. The Distillers' and Cattle Feeders' Company (the so-called Whisky Trust), the Sugar Refineries Company (the Sugar Trust), and other similar organizations with large capital and influence, were soon established. Since these organizations were not incorporated, there was no immediate means by which public officials or private individuals could learn the nature of their business. It seemed in several cases that they were acquiring a monopoly, and suits were brought in several States, which raised the question of their legality; and in others legislation was enacted against them. Hostile decisions of the courts, together with this new legislation, forced the trusts to change their form. The Standard Oil Trust was dissolved in 1892. The property held by the trust was distributed among twenty different corporations in various States and localities. In each of these corporations the former nine trustees, as individuals acting together, held control, so that the same unity of management of the twenty separate companies was maintained as had existed under the one trust. The whisky trust was changed into the form of a single corporation—the Distilling and Cattle Feeding Company—which took over most of the properties of the trust and conducted its affairs as a single corporation. The sugar trust being declared illegal, and one of its constituent companies being dissolved under the common law in the State of New York, on account of its action being *ultra vires*, was likewise

reorganized as a single company—the American Sugar Refining Company.

In these three instances, and in others, the trust organization thus became a combination of a different type. In the case of the Standard Oil Company a mere harmony of interests united separate corporations. In the case of the others named, a new corporation had acquired all the properties. This latter form of organization, after the declared illegality of the trusts, became the most common whenever it seemed advisable to organize the chief competitors in any industry under a single management.

The tendency of business toward consolidation, with the fact that the corporation form seemed to be the one recognized by the courts as alone feasible, influenced some States, desirous of attracting capital, to make corporation laws favorable to combinations desiring to do business in different sections of the country. New Jersey particularly, but also Delaware, West Virginia, and others, enacted such laws. These laws were especially liberal in permitting corporations to carry on their business, to hold directors' meetings, and in some cases even stockholders' meetings, outside of the boundaries of the incorporating State. Very little inspection was provided for or exercised. The charter tax and annual franchise tax were made light, and at the same time absolutely certain, and they were levied in such a way upon the capital stock actually issued, that there was no possibility of misunderstanding with State officials and consequent danger of corruption.

Later laws gave to one corporation the right to purchase the stock of other corporations, even of those not engaged in the same line of business; and permitted a single company to do almost anything its directors might think advisable, except to engage in banking or railroad business in the State granting the charter.

These laws, so favorable to corporations, together with the pressure of competition and with the advantages of combination, led to a very rapid increase in such industrial combinations.

The movement toward combination began among the railroads earlier than in industrial lines, and has continued to the present time. The advantages of unity of action among the railroads, of the possibility of sending cars without difficulty over large stretches of country, of the growing custom of making up through trains by which goods could be shipped rapidly and at low rates, all had their influence toward encouraging the formation of more and greater combinations.

THE RECENT CONSOLIDATION MOVEMENT.

The rapid growth of capital, with the advantages for its use which were shown to follow combination, has accelerated consolidation in recent years. When goods were in general demand over wide sections of the country, when these goods were of a certain standard uni-

form quality, and when the goods were bulky, so that the freight charges formed an essential part of the cost, it was found that a combination in the production of such goods might readily secure so great an advantage over its smaller rivals that the tendency toward monopoly became strong. Combinations in the oil, sugar, salt, and similar industries were organized early, and they became powerful. When large establishments were necessary in order to produce at the lowest cost, a combination had a decided advantage over an individual competitor of small financial strength. Experience further showed that when expensive advertising was necessary to popularize special brands or trade-marks, combinations had an advantage over smaller concerns.

These three influences—a standard product, very large capital, and popular trade-marks—seem to have been particularly powerful in bringing about the most successful combinations. On the other hand, whenever it is necessary for the producer to cater to the taste of the individual consumer, it is much more difficult to form efficient combinations. It is true that in some cases the combination may buy up individual talent or genius, and in that way secure some control; these, however, are exceptional, and the combination can never expect to secure entire control of special talent.

PRESENT SITUATION.

The fever for organization which was so evident two years ago seems largely to have run its course. Bankers and other financial supporters of the combinations have become more conservative, and at present an organizer can hardly expect to find the capital for floating his plan, unless he has ready to back it a thoroughly well-established business that is showing good profits through its separate plants. Besides, it is now generally expected that owners of the old establishments, having shown themselves competent, will be the managers of the new.

There is reason to believe that the movement toward concentration of industry will go steadily on, but there is no reason for thinking that within measurable time the combinations will cover the entire field of industry. There will still be left abundant opportunity for individual ownership and management.

EXTENT OF COMBINATION.

The only available statistics regarding industrial combinations in the country as a whole are those presented by the United States Census in a bulletin issued December 30, 1901, which is subject to some slight revision. This census report applies to industrial combinations in

existence on June 1, 1900. It does not therefore include a number of recently formed corporations, especially the United States Steel Corporation, although all but one of the constituent companies now making up that consolidation were in existence at the time of the census investigation.

In the report of the census no aggregation of establishments was considered an industrial combination unless it consisted of a number of formerly independent plants brought together into one company under a charter obtained for that purpose. Many very large establishments, such as, for example, the Carnegie Company, comprising a number of mills, were not included, because they had grown up through the erection of new plants or the purchase of old plants by a single concern rather than through combination. The statistics do not include corporations or combinations engaged in the manufacture and distribution of gas or electric light and power, and they do not cover street railways. A list of the corporations covered by the investigation is given as Appendix VI in this volume, and their nature may be judged by the fact that the great majority of them show authorized capitalization in excess of $5,000,000 each, while very few have a capital of less than $1,000,000.

The total number of industrial combinations reported by the census is 183, controlling 2,029 plants which were active and 174 plants which were idle at the time of the census enumeration. The rapidity of the recent movement toward combination is shown by the fact that only 63 of these corporations were organized prior to 1897, while no less than 79 were organized in 1899 alone.

The nominal capitalization of the corporations covered by the census bulletin was $3,607,539,200, and the capital actually issued $3,085,200,868. The securities of the United States Steel Corporation, in excess of those of the constituent companies in existence at the time of the census, would increase the amount of each of the above figures by more than three-fourths of a billion dollars. (The comparison of the actual value of plants as reported by the census with the nominal capitalization is made under the heading "Capitalization," page 616.) The value of the products of the 183 combinations is stated at $1,661,295,364. A rough idea of the proportion of manufacturing industry carried on by combinations may be gained by comparing this figure with the total value of manufactured products reported by the census of 1890, corresponding figures for 1900 not being available. For 1890 the gross value of manufactured products was $9,372,437,283. From this must be subtracted the value of the products of the hand trades, neighborhood industries which are not susceptible to combination ($1,216,165,160), leaving $8,156,272,123. The product of the industrial combinations in 1900 was therefore equivalent to a trifle over one-fifth of

the product of industries where combination is possible by the census of 1890. This comparison will be greatly modified by the figures of the total manufactures of the country, which will show a total output approximately 39 per cent greater than in 1890.

The progress of industrial combination varies greatly in different groups of industries. Some industries are by their nature much more readily susceptible to the combination form of production than others. The table on the opposite page shows the statistics of industrial combinations for the great groups of industries.

Summary of statistics for industrial combinations.

	Number of combinations.	Number of plants.	Capital.	SALARIED OFFICIALS. Number.	SALARIED OFFICIALS. Salaries.	WAGE-EARNERS. Average number.	WAGE-EARNERS. Total wages.	Miscellaneous expenses.
Total	183	2,029	$1,433,804,920	24,585	$32,653,628	899,192	$194,584,715	$151,851,077
Iron and steel and their products	40	447	341,779,954	6,075	7,462,386	145,609	81,098,583	18,067,249
Food and allied products	21	273	246,623,638	4,002	4,417,444	32,958	12,326,601	11,893,350
Chemicals and allied products	14	248	175,002,887	3,015	4,364,704	27,754	12,746,006	7,022,787
Metals and metal products other than iron and steel	11	89	118,519,401	1,047	1,571,414	20,522	12,356,772	2,847,356
Liquors and beverages	28	219	118,489,158	1,151	2,406,096	7,624	4,869,457	58,621,319
Vehicles for land transportation	6	65	85,965,683	1,967	1,940,778	34,422	17,571,613	3,519,070
Tobacco	4	41	16,191,818	1,410	2,064,926	17,661	5,278,151	35,119,316
Textiles	8	72	92,468,606	1,095	1,841,913	37,723	13,297,357	3,224,666
Leather and its finished products	5	100	62,734,011	343	663,570	9,898	4,070,641	1,589,760
Paper and printing	7	116	59,271,691	1,165	1,831,528	16,706	7,478,962	3,655,291
Clay, glass, and stone products	15	180	46,878,928	1,001	1,301,159	20,294	10,994,488	1,995,220
Lumber and its remanufactures	8	61	24,470,281	615	756,783	10,778	4,389,944	1,098,276
Miscellaneous industries	16	118	45,408,869	1,699	2,030,927	17,243	8,056,140	3,197,477

	COST OF MATERIALS USED. Total.	Purchased in raw state.	Purchased in patially manufactured form.	Fuel, freight, etc.	Value of products.
Total	$1,085,083,828	$329,762,351	$609,313,778	$146,007,699	$1,661,295,364
Iron and steel and their products	325,630,784	22,979,550	246,268,385	56,382,849	508,626,482
Food and allied products	240,273,639	50,133,512	167,510,788	22,629,339	252,408,081
Chemicals and allied products	141,031,345	98,081,833	26,562,946	16,386,566	182,391,744
Metals and metal products other than iron or steel	131,020,638	59,753,215	58,864,472	12,402,950	180,154,703
Liquors and beverages	19,117,973	10,265,538	5,217,899	3,634,536	93,432,274
Vehicles for land transportation	56,600,518	45,730	47,391,179	9,163,609	85,985,533
Tobacco	29,809,804	16,035,638	3,018,207	4,755,959	74,063,029
Textiles	41,919,311	26,574,699	9,950,995	5,393,617	71,888,202
Leather and its finished products	35,463,656	33,284,055	1,446,266	733,334	45,684,829
Paper and printing	24,554,364	3,421,721	16,254,364	4,878,279	44,418,117
Clay, glass, and stone products	6,474,816	276,426	1,867,059	4,331,331	23,258,182
Lumber and its remanufactures	11,028,757	325,972	9,513,288	1,189,497	20,378,815
Miscellaneous industries	28,158,224	8,584,462	15,447,929	4,125,833	48,605,078

The table shows that in the iron and steel and related industries the output of industrial combinations for 1900 was valued at not less than $508,626,482. In 1890 the value of the products of the iron and steel industry, including foundry and machine shop products (these two groups corresponding fairly to the basis on which the above figure for 1900 is given), was $843,656,220.

On the other hand the value of the product of textile industries produced by industrial combinations in 1900 is stated at only $71,888,202, while the total value of textile products in the country for 1890 was more than ten times as great—$721,949,262.

The census figures do not permit a comparison of the proportion of any particular industry which is controlled by industrial combinations, and therefore give no clue as to the extent to which such combinations are able to monopolize any industry. In many of the most important lines of industry combinations have secured control of a large percentage of the country's production. In many articles of steel a single combination controls 75 to 80 per cent of the output, and in some lines even more; in sugar, about 90 per cent; in petroleum, at least 82 per cent. In other industries, although the percentage of the entire output controlled by combinations is not so large, still there are organizations with very large capital. In the raising or distribution of agricultural products such combinations, though not unknown—e. g., the United Fruit Company—are still rare. While a beginning has been made toward the combination of mercantile industries, not merely in department stores, but also in the union of several large establishments along similar lines, such as the combination organized by H. B. Claflin, yet by far the largest proportion of our mercantile business is still owned and managed by relatively small concerns. Many manufacturing industries, such as clothing, dressmaking, millinery, small tools, electrical specialties, house-furnishing materials, the textiles, and numerous other articles, are substantially free from large combinations. The manufacture of cotton is perhaps the most important in which no combination of large size exists.

CAUSES OF COMBINATION.

Profit is the chief motive of business men. Competition in most cases has been the primary cause of the lowering of profits. It is probably just, therefore, to mention competition as the chief cause of the formation of industrial combinations.

Organizers or managers of industrial combinations generally have the dread of excessive competition prominent, if not dominant, in their minds; though they do not expect to escape it entirely, and have a strong appreciation of its usefulness, they still clearly see its great evil when pushed to the extreme.

In looking into the affairs of any combination, the question must be considered as to the extent to which the mere desire to secure economies has brought about the combination, and the extent to which this object has been attained; and, on the other hand, how far the desire to secure a monopoly has been dominant, and the degree to which this desire has been gratified.

Competition, when carried to an extreme, has very frequently led to the production of goods of inferior quality, to efforts to crowd down the wages of workingmen, to undue extension of credits, and to other wastes injurious to the community. So far as combination sets aside these harmful elements of competition, it is doubtless beneficial to industrial society, unless, by the exercise of monopolistic power, it exploits the public and brings other evils even more serious than those of excessive competition.

FORMS OF COMBINATION.

AGREEMENTS ON PRICES AND PRODUCTION.

Although the principle of combination seems to have become firmly established in the industrial life of the United States and the leading countries of Europe, the forms have varied materially. These forms have depended in part upon the business habits of the community, the condition of the business, and the commercial laws of the various States and countries. The strongest forms of combination appear to have been promoted by laws intended to prevent them.

In all countries the forms of combination which first appeared were merely agreements, among competing manufacturers or dealers, with reference to prices. When competition lowered prices beyond the remunerative point, it was a common practice, both in local markets and in the wider business field, for competitors to agree that prices should not be cut beyond a point named, which would give to all parties a fair return. Sometimes, even when no formal agreement is reached, the exigencies of trade will lead competitors to establish a customary price high enough to enable them to keep in profitable business.

Arrangements among railroads for restricting competition sometimes amount merely to agreements to maintain rates, and sometimes go to the extent of a division of traffic or receipts under a pool. It is also well known that our great steel manufacturers generally for a number of years have had agreements regarding the prices on steel rails, steel billets, and other leading products of a kind manufactured by all.

Closely connected with the agreement as to prices is often found an agreement regarding the extent of the output. This is particularly true where the market is limited and where the number of producers is small, so that by an agreement for the limitation of production, prices can be readily regulated. Such an agreement has prevailed

for many years among the French sugar refiners, and is generally known as the French sugar trust. From time to time, usually monthly, the half dozen leading French sugar refiners, producing a large percentage of the total of refined sugar, meet, and agree upon the quantity which the market seems to demand for the succeeding month. Each refiner is allowed his fixed percentage and if he exceeds it he is fined. Although agreements of this sort do not regularly contain a clause fixing the price of the product, the adaptation of the supply to the probable demand determines substantially what the price shall be. Sometimes, instead of limiting the product, the marketing territory is divided among the producers, each being bound not to enter the territory of his former competitors.

In nearly all countries, as soon as under such agreements business begins to be unusually profitable, the temptation for each party to extend his sales, by shading the price or entering the territory of his rival, becomes so strong that some will secretly break the agreement. This often happened in the case of both the whisky and railroad pools in this country. Such violation of the contract led invariably to the failure of the pool and a method had to be devised to prevent these practices. For example, to prevent the breaking of agreements, a forfeit is fixed; and in order that infractions may be discovered, sometimes each party to the agreement is given access to the books of his rivals, but more frequently such examination is left to a small executive committee trusted by all. Frequently, to insure the payment of a fine imposed, each party to the agreement is required to deposit the amount of the forfeit, either in cash or in readily negotiable securities, in the hands of an executive committee or of third parties. If the laws of the country recognize such agreements as legal, this form of agreement upon prices and output is likely to become permanent. Such is the form which exists, generally, in Germany and Austria. The German courts hold such agreements valid.

In England, under the common law, such contracts have ordinarily been held to be in restraint of trade, and invalid. The English courts have been followed, in the main, by the American. Consequently, even when the forfeit has been deposited, litigation over it has led to a complete breakdown of the system.

In Austria the courts have refused to uphold such agreements, and have taken the position that the forfeit can be recovered by the man depositing it.

In France, in certain circumstances, such agreements are not merely invalid, but contrary to the penal code, and any person entering into them may be severely punished.

SELLING BUREAUS.

The failure of agreements as to prices and production, owing to disapproval by the courts, has led to other devices. The one most

common in Europe, and at times found in the United States, has been that of the selling bureau. In France and Germany these bureaus are ordinarily organized with members from each of the establishments entering the arrangement. This bureau takes cognizance of market conditions, and estimates the amount of product required to supply the trade; it then allots to each establishment the output considered its share, takes all orders for goods, fixes prices, and manages the entire selling business. Sometimes the different establishments are allowed to do more or less independent selling under a rigid system of accounting, with penalties if the rules are broken.

The former Michigan Salt Association in the United States, the Comptoir Métallurgique de Longwy in France, and the Westphalian Coal Syndicate in Germany are striking examples of this kind of agreement system. All worked successfully for many years, and the last two named are still in operation. The weakness of these forms of agreement was found to be in their doubtful legality in some countries. They are inefficient, because they do not permit of central management of the manufacturing plants.

THE TRUST.

Feeling the necessity of more complete control over its separate manufacturing establishments than had been possible under the loose agreements of the preceding ten years, the Standard Oil Company, as already stated, in 1882 arranged with its associate companies to organize a "trust," with the form and powers previously mentioned.

In this form of organization the Standard Oil was followed by the whisky trust, the sugar trust, and others. Experience soon showed that the trusts were irresponsible bodies, hard to control by the courts. There were no laws providing for the organization of such institutions; the trustees in various instances did not keep proper records which they were ready to produce in court; and the new form of business organization at once met with popular and judicial disapproval. In 1890 the sugar trust was declared illegal in the State of New York,[1] under the common law.

As a consequence, all trusts of this form were soon dissolved and the combinations reorganized in a different way. With the exception of the Standard Oil Company they became single corporations, and combinations since established have regularly taken this form.

THE CORPORATION FORM.

When it is proposed to consolidate different establishments under the corporation form, it has been customary to organize a single new

[1] The People of the State of New York *v.* The North River Sugar Refining Company (121 N. Y., 582). The decision was to the effect that no corporation, through its stockholders or otherwise, had power under the law to give over its rights, powers and duties to others, e. g., the board of trustees. This act of forming the trust was therefore ultra vires.

corporation to purchase and own the various plants. These plants are sometimes paid for in cash; more frequently in the securities of the new corporation. When the plants to be combined have been owned by corporations, it has been usual to effect an exchange of the stock of the new corporation for the stock of the old companies at an agreed ratio. The separate corporations may then be dissolved and the plants remain in the ownership of the new corporation.

This was the plan followed by the whisky trust upon its reorganization into the Distilling and Cattle Feeding Company, and by the American Sugar Refining Company when it was reorganized.

If the separate plants have not been owned by corporations, a common plan of the later combinations is to first organize the owners into the corporate form. A new corporation is then organized, which instead of purchasing the properties buys the entire stock, or at least a majority interest in the separate companies. The separate corporations maintain their existence and their dividends make up the fund from which the dividends of the new corporation are declared. In effect, this form of corporation is substantially the same as the old trust, but the corporation is organized regularly under the laws of some State, and is subject to whatever restrictions the laws of that State place upon it, instead of being an irresponsible body, as the trust was. This plan of organization has been followed by the Federal Steel Company, by the latest reorganization of the Distilling Company of America, by the United States Steel Corporation, and others.

In the management of this form of combination the officers and directors of the central company legally appear only as a board of stockholders. They can not, ex officio, direct the action of the officers of the constituent companies; they can merely give advice. But as they have the power of electing the officers, eventually their advice must be followed.

This form, in which the central corporation owns the stock instead of the properties of the separate companies, has a flexibility and convenience in organization and in retaining local brands, good will, etc., not found in corporations owning the plants.

It will be noted that pools, agreements on prices, etc., leave the constituent companies each independent and with diverse interests, whereas the trust and the combination, under the two kinds of corporations mentioned, secure an identity of interests among the separate establishments; if one is weak it is for the interest of all that it be made strong or put out of existence. The control is much more complete.

ECONOMIC ADVANTAGES OF COMBINATION.

Organizers and managers of industrial combinations frequently call attention to the savings made by production on a large scale and by the single control of establishments widely separated. All of the

larger industrial combinations, if managed wisely, should make some of these savings. Whether the savings effected will be permanent, and how important they will be, depends largely upon the nature of the industry itself and upon the management.

The savings of combination are especially important in their effect on prices. They are also a significant element in the question of the tendency toward monopoly. It is claimed that large aggregations of capital can produce so much more cheaply than smaller establishments that they can undersell them and drive them out of business.

The distinction between production on a large scale and a combination of separate plants should be remembered. Production on a large scale does not always imply monopoly. Other things being equal, twenty independent establishments may have plants so large and so efficiently managed that the cost of manufacture in each plant would be as low as though the twenty establishments were united. Much weight must be given to the argument that, while production on a large scale should be encouraged, no added gain to society comes through monopoly, and that every effort should be made to prevent monopoly through combination.

ECONOMY OF LARGE PLANTS.

It is a familiar fact that in most industries an increase in the size of the plant, within certain limits, reduces the cost of manufacture. The cost of buildings necessary for the shelter of machinery and employees is reduced in large plants. Large power plants are more economical than small ones. In a large establishment there can be coordination of machinery and of processes. The number of foremen, superintendents, bookkeepers, selling agents, and executive officers is less in proportion to the product in a large than in a small plant.

In some industries there is a limit to the economy resulting from an increase in the size of plants. There is a limit to the size of boilers, engines, and machinery, and after this limit is reached separate installments become necessary. The ability to manage processes satisfactorily has a quantitative limit. It does not therefore follow that because of large capital any single establishment can by its economies drive all others out of the field.

There is an element of monopoly in large plants that should not be overlooked. If the industry is one in which a very large amount of capital must be invested, that fact in itself includes an element of monopoly. Mr. King, of the Jones & Laughlin steel company, of Pittsburg, testifies that in order to build and thoroughly equip a plant for the manufacture of steel, and to carry on the business, an investment of from $20,000,000 to $30,000,000 is required. The necessity for so large an amount of money excludes anything like what is usually under-

stood as free competition; but if adequate profits are indicated, it is probable that even such sums could be raised without difficulty.

FREIGHT RATES.

If the industry is one in which the final product is manufactured at low cost, the saving from freight rates through the combination of plants located in different sections may be very large. While one large and well-equipped sugar refinery or salt block may produce refined sugar or fine salt at as low cost as could any number of associated plants, the element of freight becomes so large a percentage of cost to the consumer that associated refineries or salt blocks located in different sections, but working through a common selling office, could supply consumers at rates materially lower than could any single establishment, however well equipped.

The experience of the Standard Oil Company establishes this. This company has found it necessary to operate refineries in different sections of the country, one very efficient group being located on the Atlantic coast at Bayonne, N. J., and another, for supplying the Western trade, at Whiting, near Chicago. Salt is so heavy and is used in such large quantities that if transported great distances the cost of transportation may be more than the initial cost of manufacture. For example, fine salt transported from central New York to South Carolina or Florida must be sold there at a price more than double the price at the works. Before the combination was effected, attempts were made by the salt producers of New York to ship into Western territory, and by those of Michigan to ship into New York.

It is evident that by the union of these two producing centers the territory naturally divided by freight charges can be absolutely divided through the common selling office. The sale for each consumer will be shipped to him from the nearest plant, other things being equal. Owing to unusual demand in one market or to a check in output at some plant, it may be necessary at times to supply consumers from more distant plants. Generally, however, there is little waste of energy through cross freighting. The same economy in avoiding cross freights would come from the union of the coal mines of different sections of the country, of refiners of sugar, of the producers of building stone and of brick, and of practically all industries in which freight is such an important element in the selling price of the product. On the other hand, manufacturers of silks, of drugs, or of highly finished products of almost any nature, would effect small savings in freightage. Certain combinations may also derive some advantage from being able to supply the trade from warehouses in markets centrally located, to which goods can be shipped when the lowest rates prevail, or by water.

Where a combination is able to secure economies in freight charges by such methods, it evidently has an advantage over any single competitor, which gives it a degree of monopoly power.

ADVERTISING—TRAVELING MEN.

Business men often say their most difficult problem is that of securing a market for goods. In many instances the cost of selling amounts to as much as the cost of production. Products can be readily cited, usually those selling under trade-marks, the reputation of which is made by extensive and costly advertising. A page in any prominent magazine costs an advertiser from $250 to $400 for a single issue. The most popular brands of soap, health foods, tobaccos and cigarettes, and of boots and shoes, etc., are thus advertised extensively, and this expense must be included in the selling price of the product. If to the cost of advertising in the magazines is added that of colored pictures furnished to retail dealers, of painting billboards, buildings, and rocks in all prominent places throughout the country, and the expense of putting up goods in attractive packages, the cost of selling is probably doubled.

In all these particulars a combination very materially lessens the cost or makes more effective the same amount of money expended. If twenty competing firms, for example, use twenty pages in the magazines monthly, these twenty firms uniting may center their efforts upon two or three of the most popular brands, and by occupying only two or three pages, accomplish as much in the way of sales. The same principle applies to billboards and to furnishing pictures to retail dealers.

A similar saving can be made in the number of traveling men employed. Twenty competing firms must each send a traveling man to each customer. A combination of these firms may send to each customer a man of greater skill in selling than any one of the twenty, who will be able to supply any of the twenty brands with which buyers are familiar.

There is danger, of course, that managers of combinations may regard their monopoly as so complete that a dealer must get the goods from them anyway, and discontinue advertising and the visits of traveling men in whole or in part.

It is necessary to distinguish between various kinds of advertising. Some advertising is intended to bring to the attention of consumers the fact that goods needed, and with which they are familiar, may be readily obtained at a certain place and at certain rates. A second kind is intended to make the consumer acquainted with new goods and to instruct him regarding their merits. In both cases the want is known. In many cases, however, the object of advertising, either

through periodicals or through traveling men, is to educate the consumer to new wants, to give him information regarding matters of which he had no previous knowledge, but which will lead him to expend his money for the gratification of these newly awakened wants. A very large proportion of advertising comes under the last two heads.

A combination may perhaps lessen its cost of advertising when the goods are already known and the consumer simply needs to learn where to satisfy his wants. Any material lessening in the expense of advertising, where the purpose is to awaken a need or to persuade the customer that the advertiser can meet his needs best, may result in a heavy falling off in sales. Lessening the number of visits of traveling men is likely to result in smaller sales also, unless the goods are necessities, like salt or sugar. Many later combinations have made the mistake of attempting to effect too great savings in these ways. The result has been a lessening of sales more than sufficient to offset the saving.

It is evident that if a combination, by judicious advertising or in any way, develops a strong demand for its goods, it becomes to a certain extent monopolistic. Mr. Flint, for example, the organizer of the American Chicle Company, testifies that the most valuable asset of that company is its trade-marks. The consumers of chewing gum have become so habituated to the use of certain well-advertised brands that the company has been able to pay high dividends on a capitalization nine times the amount of tangible assets. There can be no doubt that a rival company, attempting to introduce a new brand, would find that through this "good will" the American Chicle Company possesses an element of monopoly to overcome which would need an expenditure of large sums of money and of much time in "education."

SUPERIOR MANAGEMENT.

When an organization is first effected another advantage enters. However skillful may be the superintendent of any establishment, it is certain that through intimate association with eight or ten other efficient men, he can secure many valuable ideas. When combinations of different establishments are made, the common knowledge of the inner workings of each separate establishment is valuable to all. Thus, while the Glucose Sugar Refining Company effected an organization of only six different establishments, the general manager states that even the best of these factories, the only one that before the combination was making reasonable profits, found so many new ideas in the others that modifications were made which greatly improved its efficiency. Mr. Duke, the president of the American and the Continental Tobacco companies, declares that in his judgment the greatest benefit of combination comes through this interchange of ideas.

As compared with any excepting the very largest and best-equipped

individual establishments, the combination will be able to secure better distribution of managing talent. Some men have peculiar strength as salesmen, others as machinists, others as organizers of business plans, and still others as managers of men. In almost any single establishment of moderate size a single individual must, to a considerable extent, perform more than one of these different functions. When several establishments are combined under one management, each individual can be assigned to the department for which his peculiar gift especially qualifies him. The chief advantage would probably be found at the time when the organization is first effected, but it will always remain true that an establishment with a capital of many millions will be better able to secure capacity of the very highest order in each line than can any smaller establishment in which one man must devote himself to several branches of the business.

This advantage will always remain with the combination. Carelessness or lack of interest on the part of hired superintendents is always to be overcome. The combination meets this condition by comparative bookkeeping, so that methods and the exact results in each establishment are known in the central office. Reports are often made daily, usually weekly or monthly. In this way the general manager is enabled to compare the work of each superintendent with that of all the others. Whenever any weakness appears, the attention of the superintendent responsible is called to it. Service in this way can be so controlled that the standard of excellence in the best can be established and maintained in all the others.

Responsible managers are often paid in part according to results accomplished. In several of the English combinations the various superintendents receive a fixed salary, and in addition a percentage on the net profits of their mills, which, by careful management, frequently amounts to considerably more than the salary. In this way they are stimulated to produce the best results.

Similar methods obtain in this country. The National Salt Company pays its managers in part according to results. The same custom is followed by some of the rubber companies. It was Mr. Carnegie's plan, used for many years in his steel works at Pittsburg. The United States Steel Corporation has adopted it to a considerable extent also.

It seems to be the opinion of many of the managers of the most prominent combinations in the United States that through the two means mentioned, as well as through the natural pride men feel in their work, the alleged lack of efficiency in hired superintendents is largely overcome.

DISTRIBUTION OF PRODUCT AMONG PLANTS.

A saving can often be made by concentrating departments of manufacture instead of compelling each establishment to make numerous parts of the product. The English Sewing Cotton Company, in Eng-

land, for example, when organized, found that each of its large establishments, besides manufacturing thread, also manufactured spools on which the thread was wound. A great saving was effected by equipping two plants to manufacture all spools required by the combination. The president of the American Steel Hoop Company testified that before that company was organized each large mill, in order to meet the demands for the various shapes and sizes of iron which it supplied, had to keep on hand many kinds of rolls for rolling different products. Much time was consumed also, while filling large orders for many varieties, in stopping the mill to change these rolls, thus preventing continuity of employment and production. After the combination was effected, each mill produced certain sizes and qualities of iron bars. When a large order was received, it was distributed to mills producing the varieties required, so that practically no time was lost in changing rolls. The men became more efficient also, because of working on one product. The result was an estimated saving of at least one dollar per ton in the cost of manufacture.

ECONOMIC DISADVANTAGES OF COMBINATION.

The advantages possessed by combinations over smaller competitors have their limitations, which often make it possible for smaller concerns to compete successfully. Unduly large enterprises may entail direct disadvantages. Under modern conditions a monopoly can not abuse its power to any great extent without finding rivals springing up to dispute its supremacy.

Many managers of industrial combinations, both in Europe and the United States, are of the opinion that a prominent, if not the chief, disadvantage found in the operation of such organizations is the difficulty of securing from paid superintendents the same degree of personal interest and ambition, that naturally is given by an individual who is the owner of the establishment he is managing.

When production is conducted on a great scale it is difficult to vary the nature of the product to suit individual tastes. Standard patterns and styles can be made at low cost, but a large force of men can not without serious loss change methods of work to produce new styles. The tendency, therefore, in all of the greater combinations is to lessen the number of styles of product, to hold as long as possible to the manufacture of the styles in hand, and on this account it is probable that combinations have less educative influence than individual producers. They are not likely to cater to artistic tastes to the same degree as independent producers. There is, in consequence, a wide field which must always remain open for producers possessed of exceptional artistic abilities.

There is never likely to be a combination of architects, painters,

decorators, milliners, or of dressmakers, which shall force their products into a small number of patterns. In all these lines of industry there will be certain forms produced with uniformity and at a low cost. These may add greatly to the comfort and well-being of the community without sacrificing to any great degree the development of individual tastes in either producers or consumers.

Great combinations buy their material in large quantities, and generally expect to make sales to jobbers without entering into the details of distribution. The necessity of buying on a large scale makes it impossible for the combination to pick up bargains from bankrupt firms or from those who, for various reasons, wish to dispose of surplus stocks at the lowest prices. The possibility that a producer on a small scale may secure a large part of his material in this way will probably always remain in many lines of industry. Small establishments can often secure even greater advantages in selling by waiting for opportunities to place small quantities of goods at favorable rates or in particular localities. The production of small establishments maintained in these ways will be limited, of course, so that it can not be said that their competition will be effective to any great extent in lessening the control of the market by the combination.

For a long time to come there is certain to be a popular prejudice against combinations, even when such combinations do not practice the abuses of monopoly. There is always the danger of monopoly from the largest combinations, and this danger the people fear. The individual producer, therefore, may count upon having popular sympathy in his favor. The customer is not likely to avoid dealing with a monopoly at any great sacrifice, but other things being equal, he will give preference to the independent producer.

FREIGHT DISCRIMINATIONS.

There can be no doubt that in earlier times special favors from railroads were a prominent factor, probably the most important factor, in building up some of the largest combinations. The receipt of discriminating favors from railroads has been conceded repeatedly by representatives of the combinations themselves. The evil effect of such discriminations upon the rivals of the combination is self-evident. The injustice of the practice can scarcely be exaggerated, and warrants the most earnest efforts to suppress it. There is reason to believe that since the passage of the interstate-commerce act, and especially during the past three years, these discriminations in freight rates have not been so common, although evidence taken by the Commission seems to show that secret discriminations still exist. (See pp. 349–364.)

Instances are to be found where freight rates, although entirely open

and applied equally to all shippers over the lines in question, nevertheless favor certain shippers, especially industrial combinations. This result is reached by making freight rates lower from points where the important plants of the combination are located, and making them higher on other routes over which smaller shippers, the competitors, have to distribute their products. A remedy for secret discriminations between shippers over the same lines will be found through amendments to the interstate-commerce act and as otherwise recommended in our report on the subject of Transportation. The second evil will be more difficult to reach, but probably can be remedied in the same way.

CAPITALIZATION.

The figures regarding industrial combinations presented by the census of 1900 in a recent bulletin are given as of June 1, 1900, and do not cover various important recent combinations, notably the United States Steel Corporation. The following table shows the authorized and issued capital of the 183 companies reported by the census:

Capitalization of industrial combinations.

	Authorized.	Issued.
Total	$8,607,539,200	$8,085,200,868
Bonds	270,127,250	216,412,759
Preferred stock	1,259,540,900	1,066,525,963
Common stock	2,077,871,050	1,802,262,146

The actual value of manufacturing capital employed by these combinations is stated by the census authorities at $1,458,522,573, distributed as follows:

Number of plants	2,147
Capital:	
Total	$1,458,522,573
Land	156,885,285
Buildings	260,855,684
Machinery, tools, and implements	398,315,548
Cash, bills receivable, etc	642,466,056

This amount is equal to 47.3 per cent of the securities issued and exceeds the amount of bonds and preferred stock issued by $175,583,851.

The census authorities, however, call attention to the fact that the amount of actual investment of manufacturing capital, as reported, does not cover the entire investment of the corporations. Schedules call only for investment in manufacturing industry. Many of the corporations concerned are engaged also in transportation and mining. This is notably true of the iron and steel combinations. The capital invested in these cognate enterprises is not included in the above-named figure. Other corporations are engaged to some extent in mercantile business, while some hold large tracts of forests and other

property not directly connected with their manufacturing business. It should be noted, however, that the figure of manufacturing capital given includes cash and bills receivable—that is to say, running capital, the amount of such items reported being not less than $642,466,056.

Much has been said regarding the evil of overcapitalization in connection with industrial combinations.[1] Two opinions regarding the proper basis of capitalization are common. First, it is thought by conservative men that the issue of stock should be restricted to the value of tangible assets and working capital. Some of the combinations,—for example, the Pittsburg Plate Glass Company,—seem to have taken this as the basis of their capitalization. The Massachusetts anti-stock-watering laws embody this principle. Congress seems to have taken this rule as the proper standard in making provisions for corporations in Porto Rico. Most of the organizers of large combinations are of the opinion that earning capacity, as well as tangible assets, is a proper subject of capitalization. The plan which they have most commonly followed is to issue preferred stock to an amount equal to the tangible assets, and at least an equal amount of common stock, which was broadly said to represent good will and opportunity. Often, however, instead of tangible assets, in the strictest sense of the word, the preferred stock of a combination has represented the cash selling value of the properties purchased as going concerns. This, of course, includes good will in its proper sense. It was upon this basis that the Moore steel companies (the National Steel, American Steel Hoop, American Sheet Steel, and the American Tin Plate companies) were organized. Owing to the favorable condition of the iron and steel trade at that time, this cash selling value represented much more than the cost of reproduction of the plants and running capital. Then there was issued an equal or greater amount of common stock said to represent good will.

In these examples "good will," in the language of the corporation promoters, has represented two entirely different things—(1) the value derived from patents, trade-marks, and business connections, and (2) the value of the earning capacity of the establishments and the hopes of the promoter as to savings and profits which may be realized as a result of the combination. These profits may be secured, either through the economies made by the combined management, or through the power of the combination to secure monopoly prices. Within limits, this last consideration is really a capitalization of monopoly. It is often difficult to separate and distinguish the bases of capitalization.

The American Chicle Company affords an excellent example of capitalizing earning power. Realizing the great value of the leading brands of chewing gum manufactured by the constituent companies, the organizers issued preferred stock to perhaps double the value of the properties, and common stock to three times the amount of the preferred,

[1] See also in the report on Transportation in this volume, pages 405–416.

making a total capitalization of from nine to ten times the value of the tangible assets. The demand for the product has rendered it possible to pay dividends on this amount of stock. The element of monopoly in this case is found in the trade-marks.

As the market values of business establishments often increase or diminish, a high capitalization at organization may later become low capitalization, or vice versa. The common belief among corporation promoters, that the ability to pay dividends on capital justifies any capitalization, however great, is not to be accepted without further consideration. It all depends upon whether high earnings are secured by savings, good management, and proper relations to the public, or by unjustifiable methods, such as deceit or extortion. In the latter case no justification can be found for capitalization based on earnings.

RESULTS OF HIGH CAPITALIZATION ON PRICES OF PRODUCT.

There are differences of opinion regarding the effect of a high capitalization upon the prices of the product. Probably the majority of those who have been active in the management of the industrial combinations take the position, as did Mr. E. R. Chapman, that the amount of capitalization has no effect whatever upon prices; that the productivity of plants and the amount that can be obtained for their product is entirely independent of the amount for which they are capitalized. Other corporation managers go further and express the opinion that the effort to pay dividends on capitalization, however large, is a powerful one. Overcapitalization may thus injure the consumer. The corporation that furnishes 75 per cent or more of the entire output of the country might fix prices higher than otherwise they would be. This is certainly the opinion of a large proportion of consumers and of many unprejudiced persons not connected with the combinations. Managers of corporations are likely to aim at fair nominal dividends, though these may represent an enormously high return on actual investment. This is also the opinion of certain officers of combinations who may be said to speak, to some extent at least, from experience and inside knowledge.

Even those who contend that overcapitalization does not increase the price of manufactures to consumers would concede that in the case of public-service corporations, whether subject to supervision or not, the effect would be different. If a company capitalized for the value of its tangible assets were able to pay dividends of 30 per cent, the popular demand for a reduction in the price of the product—gas, for example—would be much stronger than if the dividends were 6 per cent upon a capitalization five times as great, the net earnings being the same. The public authorities would also be more apt to reduce the price if dividends were high. In New York and Massachusetts commissions are given supervision over public-service corporations, with

power to regulate or recommend rates for service and to pass upon the exigency of any proposed new service. The latter provision would seem to be quite favorable to existing corporations, but, when coupled with the power to regulate rates for service, the permanent interests of the public are promoted and preserved by such supervision and regulation.

RESULTS OF HIGH CAPITALIZATION ON INVESTMENTS IN STOCKS.

Although there has been a difference of opinion regarding the effect of high capitalization upon prices of products, there is practically none regarding its effect upon investments. When a combination is organized, it is usual that the different plants entering into it, or the stocks representing them, are bought by a promoter or by a syndicate, the terms of the contract in each case being kept as secret as possible.

The profit of the promoter is generally that portion of the stock issued, that is left after paying for the plants entering into the combination and the expenses of the organization. Usually, therefore, the amount paid for the plants is not known to the investing public; the amount received by the promoter is not known to the vendors themselves; at times no careful estimate is published of the value of the tangible assets; even the earning capacity of the different plants is not always made public. In consequence, the speculative element in the value of the shares for the first few months after the organization is possibly the most important feature in connection with them.

The larger combinations usually issue to their stockholders once a year an annual report regarding the business. This report, however, is frequently in terms so general that it is difficult to learn much regarding actual conditions, and this speculative element still remains.

This secrecy in promotion, combined with very large capitalization, gives a great advantage to directors and officers of the combination and others associated with them in knowing the value of the shares. There seems to be no doubt that in many instances the promoters of combinations have been able to unload large blocks of stock at prices far above their values, as shown by later experience. Parties interested in the International Silver Company attempted by a pool to unload stock at 30, which soon afterwards fell to 12. At other times insiders might be able to take advantage of the public in the stock market, as was charged against an officer of the American Steel and Wire Company, and there is no question that some of them do take such advantage of stockholders for whom they are acting substantially as trustees.

It is probable that the period of most excessive capitalization of corporations has passed. Bankers and investors are insisting upon more and more information regarding the plan of organization, the actual value of tangible assets, the nature of good will as shown by proved earning capacity, and other similar matters, before they will supply

funds needed to effect a combination or will loan on its securities. In this way the evil of overcapitalization, which was so common two or three years ago, has been somewhat lessened.

Owing to the popular distrust of combinations and to the fear of hostile legislation, it is probably true that the shares of industrial corporations do not have the market value to which their earning capacity would seem to entitle them.

How far the market values of such shares are to be considered stable and their earning capacity permanent can not be told until after a period of depression. At present the price of industrial stocks as compared with railroad stocks is low. Mr. Charles R. Flint, in his testimony before the Commission, compared the earnings of 47 of the more prominent industrials with those of 37 railroads. The result showed average earnings of 13.6 per cent on the market value of the industrial stocks and 7.44 per cent on the total capitalization; the railroads paid 4.85 per cent on both the market value of stocks and their total capitalization.

The significance of such figures may be criticised, but they are striking, and show a popular or speculative distrust of industrials.

PRICES.

The rise or fall of prices after a combination has been formed is often due to causes other than combination itself. In every developing industry the general tendency is for prices to fall. Improvements in methods of production and distribution are being made continually. This is the normal condition of American industry, and combination is one of its many means.

Since the era of combination has been entered upon there is no standard by which to judge accurately whether or not prices are too high, for comparison can be made with former conditions only; but the method most approved by business men and economists is to compare the changes in price of the product of a given combination with the average price (the index number) of many articles of the same general class, regarding which most conditions were the same, except the one of combination. Such a comparison can not be entirely conclusive, as the factors entering into the problem are numerous, but it may at least be suggestive of the effect of combination.

With this caution as to the untrustworthiness of many price statistics and the inferences drawn therefrom, some conclusions may still be stated which seem reasonable.

If combinations are able to effect large savings, it becomes evident that they can lower the margin between the cost of the raw material and of the finished product, thus giving to the owners larger profits than before and to consumers lower prices.

If the combination has a practical monopoly, either through the control of materials or by means of a patent, or through the power of large capital and the control of a very large proportion of the output, it naturally becomes possible for it so to increase the margin between cost of materials and finished products as to make larger profits not merely through the lessening of the cost of production, but through sheer power over the market. In these two ways, then, through savings and through the power of monopoly, the marginal profit as well as the price of products may be increased by the combination.

The facts regarding prices, so far as they have been carefully studied and interpreted, seem to bear out this conclusion. In the reports of the Industrial Commission there has been an attempt to present a statistical study of this question. In several different lines of industry—such as sugar refining, oil refining, iron and steel manufacture, and others—a careful comparison of the margin between the cost of the raw materials and the price of finished products has been made. In some cases it is possible to eliminate practically every other factor excepting that of combination itself. In others, while the evidence is not so clear, it seemed to tend in the same direction. The general results of the study show that in most cases the combination has exerted an appreciable power over prices, and in practically all cases it has increased the margin between raw materials and finished products. Since there is reason to believe that the cost of production over a period of years has lessened, the conclusion is inevitable that the combinations have been able to increase their profits.

In some cases the increased cost of the raw materials accounts for the greater part of the increase in the price of the finished product, but the study of the margin makes it clear that there has been also an increase in profit. In other cases there has been an increase in the cost of production itself, owing to advances in the price of machinery, wages, etc.; but in all of the industries most thoroughly investigated, a careful analysis shows that the margin has not been allowed to become so narrow as under a system of free competition. The dividends of the combinations and the testimony of their managers confirm the conclusion reached. On the other hand, on account of the saving effected by manufacturing on a large scale, it should be possible for the combination to put its product upon the market cheaper than can its competitor. There is reason to believe that in some lines of industry this has been done, and that competitors are crushed out simply because of the advantageous offers made to consumers by the combinations.

Many times the lowering of price by a combination has not been general, but has been made in comparatively small areas of territory, or sometimes even to single consumers; while in order to recoup itself for this local lessening of profit, if not even for an absolute loss,

the combination has maintained or even raised prices elsewhere. Complaints of this nature have been made especially against the Standard Oil Company, but also against other combinations. The fact is at times denied, and the practice is comparatively seldom defended by officers of combinations on business reasons, but certain managers do not hesitate to say that it is their policy to meet competitive prices, and that if they are compelled to lose in certain localities, they must raise their prices elsewhere in order to secure what they believe to be reasonable profit.

A similar control over prices, through the power of the combination, is found at times in connection with the purchase of raw materials, although ordinarily the effect is less marked here than in the case of selling prices. There can be no doubt that the Standard Oil Company has for many years, through its control of pipe lines, been able practically to fix the price of crude petroleum. The American Sugar Refining Company, its president admits, owing to its power in the market, is able to buy at slightly better rates than its competitors, but the difference is so slight as not to affect to any great extent general market conditions.

COMBINATIONS AND EMPLOYEES.

ATTITUDE OF COMBINATIONS TOWARD TRADE UNIONS.

It is impossible to make any statement that will be of universal application regarding the attitude of combinations toward trade unions. In most cases the position taken seems chiefly a matter of personal preference, or it may have been brought to the combination by the experience of some of the establishments which form it. The evidence before the Commission indicates that the great majority of the combinations recognize trade unions and deal with their representatives in fixing the wage scale and conditions of labor.

In certain cases, where the workingmen in the trade are not fully organized, the unions as such are not recognized. In some instances—as, for example, in the tobacco industry—the combinations do not deal with the officers of the trade unions, but make no objection to trade unions being formed among their employees. The managers of most of the steel combinations which now make up the United States Steel Corporation have dealt with the officers of the Amalgamated Association of Iron, Steel and Tin Workers and have signed the scale with them. There can be little doubt that in many cases the organizers of combinations have felt that through the power of added capital, and the possibility of filling orders from any of the various plants, they would be more independent in their dealings with trade unions. At times the combinations have derived advantages in this way. For example, in 1899, when there was a smelters' strike in Colo-

rado, the American Smelting and Refining Company closed the plants in which the strikers had been employed, transferred the work to other plants, and in that way coerced the strikers to some extent. When workingmen are not organized throughout the whole industry, a combination is able in this way to secure an advantage over individual establishments.

When workingmen are thoroughly organized throughout the whole industry, the situation may be quite the opposite. Mr. Burns, former president of the Wall Paper Association, testified that in his opinion the combination was an aid to the union in enforcing its demands. It had not been customary before the combination was formed for the men to be employed throughout the year. Sometimes the establishments were closed two or three months. Soon after the combination was formed the workingmen demanded an increase of working time to eleven months yearly. As the union included nearly all of the skilled workers in the trade, the combination felt compelled to yield. Afterwards, demand was made for employment the full year, and this also was granted. Later still, the further demand for an increase of wages was insisted upon, and the combination saw no way of making successful resistance. It was the positive opinion of Mr. Burns that when workingmen were thoroughly organized in any industry, they derived a decided advantage from dealing with one employer instead of many; that although the single employer had larger capital than any individual, the loss from a shut-down would be greater, and the officers of a great corporation would feel the pressure from their stockholders to such an extent that they would yield.

The great strike of 1901 in connection with the United Steel Corporation throws no additional light upon this subject. The officers of the corporation at the beginning determined to leave the settlement of the difficulties to its constituent companies. The labor union, however, preferred to deal with the officers of the central corporation, knowing that they had in the end the determining power. The officers of the combination showed little unwillingness to deal with the officers of the union and met them on a common ground for discussion and negotiation. This strike illustrated the advantage possessed by a great combination in its ability to adapt its plants to various products, and to transfer not only orders but workingmen to different plants; but as the trade was not completely organized, little light was thrown on the question of ultimate relations between combinations and labor organizations.

Even if the United States Steel Corporation had tried to make all its plants nonunion, and had succeeded as did the Carnegie Steel Company, the fact of its success would not have proved that combinations were detrimental to the interests of the workingmen, or that they could succeed better than individual firms in imposing conditions upon the unions.

The success of the Carnegie Company in the strike of 1892 was complete. The success of the workingmen in the case of the wall-paper manufacturers was no less complete. In both cases it was a matter of particular advantage and particular strength under special circumstances. The same thing holds true in the main as regards the United States Steel Corporation. Although more men and more capital were involved in the strike of 1901, the settlement of that difficulty does not settle the question of the effect of combination on labor.

ATTITUDE OF TRADE UNIONS TOWARD COMBINATIONS.

Among laboring men there is a difference of opinion as to the attitude of trade unions toward combinations, although apparently all expect employers to utilize, in their dealings with labor, the advantage of the added strength that comes from combination. Some of the unionists are of the opinion that through added strength of capital there is danger of the unions being broken and of the laboring classes suffering great injury thereby. Others, however, including the leaders of some of the strongest unions in the United States, believe that the power of the unions can be increased as rapidly as the power of the capitalists, and that through the savings which come from combination the opportunities of the workingmen are better than ever before. They believe that the unions will be strong enough to secure their full share of these savings in increased wages. Many think that under combination employment will be more regular than before.

If laboring men and employers work together there is no doubt they can divide a very large portion of the savings resulting from combination. On the contrary, if the laboring men and the employers contest too strongly for these savings, the result will be an increase of expense so great that they will entirely disappear. Again, if the combination does not secure practically complete control of the market, but is compelled to meet strong competition, there will be, in spite of the savings from production on a large scale, no increased fund or profit to be distributed. Competition will hold prices down to but little above the cost of production, and the consumer will gain rather than the workingmen.

INDICATIONS OF CONCILIATION AND AGREEMENTS.

In England, organizations of employers on the one hand and labor unions on the other, through joint committees meeting from time to time, have settled disputes, and have thus succeeded for many years in preventing strikes. Similar systems have been introduced in a few industries in the United States with advantageous results. For the success of such conciliation agreements, it is necessary that both employers and employees be generally organized throughout the industry.

Organizations of employers may be established only for the purpose of dealing with the workingmen. But when harmony of action is as complete as in the case of some of the combinations, the work is more readily done and results more easily reached. Several of the consolidated corporations in the iron and steel and the glass trades already practice "collective bargaining" with labor organizations.

Some of the industrial combinations encourage the purchase of shares of their stock by employees, in order to give them an interest in the business, which is expected to allay or prevent contention.

EFFECTS OF COMBINATIONS ON WAGES.

So far there seems to be no indication that the combinations are attempting to lower the wages of workingmen. The attention of the Commission has not been called to a single instance of an attempt on the part of the combinations to reduce wages generally. In fact, the combinations have apparently raised wages as willingly as individuals, and given their employees privileges of all kinds with no more hesitation.

The investigation made by the Department of Labor, at the request of the Industrial Commission, shows that combinations have raised wages slightly more than other employers of labor in the same industry. Those records are somewhat incomplete, but indicate that, up to the present time, combinations have dealt with their employees, so far as wages go, as fairly as the managers of independent plants, or as the constituent members of the combination before its organization. Advances in wages, the past few years, are doubtless due as largely to general business prosperity as to the combinations.

WAGE-EARNERS AS HOLDERS OF STOCK.

Several of the combinations have thought it wise to attempt to interest their employees in the success of their business through giving them an interest in the profits. The National Steel Company, for instance, has persuaded many of its workingmen to become investors in its preferred stock. The managers of several of the leading corporations have seriously considered the plan of setting aside a certain amount of preferred stock, which they believed would afford an absolutely safe investment, to be disposed of to their employees at special rates, independent of the stock market. They have thought that in this way the most influential workmen would become interested in the profits and success of the combination, a more conservative feeling would result, and the prosperity of the business would be promoted.

So far, these plans have not been generally successful. Labor leaders are said to regard them with some suspicion—as a way in which the corporations may secure greater control over their workingmen, so they might, with less danger of a strike or other labor com-

plication, reduce wages in times of pressure. The unionists, generally, prefer to hold strictly to their own methods for bettering their condition, rather than to attempt to get an increased income through dividends on any small amount of stock which they may be able to buy.

EXPORT TRADE.

One of the gratifying conditions of the last few years is the very rapid increase in the export trade of the United States. This increase is a matter of congratulation, not merely because of the evidence that it furnishes of the increasing industrial strength and prosperity of the country, but because it furnishes the means for keeping the country well supplied with the gold needed as a part and basis of our currency, and a ready means of settling our indebtedness abroad. Though nearly 65 per cent of our exports are agricultural products, which the combinations affect only slightly, the increase in the exports of manufactures has doubtless been promoted by the great industrial combinations. With plenty of capital at command, they have been better able than small concerns to send agents into foreign countries to study conditions, to open branch factories tributary to the home factories, and in other ways to extend their trade. In many instances such trade could not have been secured by smaller establishments whose strength had to be expended in competition at home.

EXPORT PRICES.

In order to gain and hold foreign trade, it has occasionally been necessary for both combinations and individual exporters to make low prices to foreign purchasers. It is in evidence before the Commission that, even within this country, the more distant markets receive concessions in price. In about 20 per cent of the cases covered by the Commission's returns, the export prices have ruled lower than those charged to home consumers. Sometimes merely surplus stocks have been unloaded upon the foreign market. At other times, when the home demand has slackened somewhat, it has been possible to keep manufacturing establishments employed to their full capacity and most productive efficiency, only by finding a foreign market for part of the product, and that could be done best by cutting prices.

Among the reasons given by manufacturers in their admissions that prices of their goods in the foreign markets are made lower than in the domestic market are these: To meet foreign competition; to work off surplus product; to secure a permanent foreign market; taking a less price for cash as against credit transactions at home; to offset foreign duties and foreign transportation charges, which the buyer has to pay; to allow for rebates in duties, which foreign material has to pay; and to match the more stable conditions of foreign markets as against the fluctuations of the home market.

The practice is quite common in all countries, and on the part of the separate establishments as well as of combinations. Were this plan not adopted, it would often be necessary to run the plants only part of the time, which would not merely throw a portion of the laborers out of employment, but would also add materially to the cost of production of the remaining product. It is probable, therefore, that when the export prices have been at cost, the result has been, by keeping the plants fully employed, to hold the prices to American consumers lower than would have been possible otherwise.

INDUSTRIAL COMBINATIONS AND THE TARIFF.

The tariff question is of so wide importance and of such general interest that the discussion in this connection is limited to its relations to industrial combinations.

It has been frequently asserted that one of the causes, if not the chief cause, of industrial combinations is the protective tariff. Experience, however, both in this country and in Europe, does not justify the assertion. In our own country some of the largest and most monopolistic combinations have no direct tariff protection, and in England, where there are no protective duties, many combinations have been founded, most of which have operated with success. Indeed, in no other country than England is the form of industrial combinations so like that generally found in the United States.

It is possibly true that in some instances the protective tariff may have furnished occasion for combination. When, for instance, a new industry, like the manufacture of tin plate, has been started under the direct stimulus of the tariff, if profits are exceptionally high for a time much capital is called into that line of industry, and the strong competition which naturally ensues reduces profits so low that competitors save themselves by combining. The real cause of the combination is to be found, however, in this country, as in others, in business conditions rather than in the tariff.

HOME PRICES.

Witnesses before the Industrial Commission advocating free trade have contended that prices of products in protected industries were higher than prices of imported articles of the same kind would be in the absence of protection. While this is naturally the case when industries are first established, competition at home soon prevents the price from being kept above foreign prices to the full extent of the tariff, and in many cases brings the prices as low as those abroad, and sometimes lower. This, however, is under the assumption of free internal competition in the protected industry. If a combination has been formed which secures control of a large percentage of the manufacturing establishments within the country, and especially if it con-

trols practically all of the best raw materials of the industry, it is clear that this domestic competition has in part lost its force as a power to lower prices, although the fear of new competition, even against the combination, and far-sighted business prudence, may check exorbitant rates.

The United States Steel Corporation, which is said by its officers to control something like 80 per cent of the Lake Superior iron ores and most of the coking coal thus far discovered, is cited in illustration. It is contended that such ownership is monopolistic, because the ores in various Southern and Western States, on account of their distance from the leading markets, are comparatively little effective in promoting competition throughout the country. It is also contended that the tariff of 40 cents a ton on iron ore effectually prevents the establishment of competing iron and steel plants on the Atlantic coast, which might serve themselves with ore from Spain, Cuba, and Nova Scotia, as well as of plants in the central region, which might use ore from the Canadian Lake Superior country. But this condition existed before any combinations were formed.

Whether or not it was due in any degree to the tariff has long been a disputed question, for the heavy iron industries of the Atlantic coast gave way before the competition of those located near the great interior sources of supply, which protectionists contend was due to the operation of natural laws more than to the force of tariff laws. In support of this contention they cite the fact that many of the largest works for converting iron and steel into machinery, hardware, and other highly finished products are in prosperous operation in both the Atlantic and the Pacific States. Some protectionists frankly admit that the free admission of raw materials might tend to revive the heavy iron industries of the coast, but they say that protection is a national policy, calculated to develop our own natural resources, and that to secure equitable adjustment involves the necessity of some concessions.

So far as combination adds any new feature to an old issue, if it can be shown that any important evil or menace to the public results from the tariff which could be prevented or diminished by a reduction of duties without resulting in other and greater evils, the changes should be made. Such an instance would present a strong suggestion for a reciprocal trade arrangement. But from the first the Industrial Commission has considered the general subject of the tariff as belonging outside the realm of its investigations, and it has not the data upon which to base a recommendation beyond the suggestion of an exhaustive inquiry in connection with the subject of reciprocity.

RELATION OF THE TARIFF TO EXPORT TRADE.

Combinations, and others, often sell goods abroad at less than domestic rates. Business men frequently claim that it is sound busi-

ness policy to export surplus stock at even lower rates than would be profitable at home. The theory is, the home market having been supplied, to manufacture for export trade does not increase the cost of management, maintenance of plant, etc., proportionately with the increase of product; that the cost of additional material and labor only need be considered; that even a small profit on such trade is so much additional profit; that workingmen are benefited by the additional employment; and that the country in general is enriched by the additional wealth thus brought here. On the other hand, it is contended that a combination is able, frequently, under the protective tariff, to make its home profits large enough so that it can not merely occasionally unload a surplus stock on the foreign market, but can afford to extend its markets steadily in this way at the expense of the home consumer.

From such information as came to the Industrial Commission in response to its inquiries addressed to exporters, it is certain that the making of lower prices abroad than at home has been greatly exaggerated. About 20 per cent of those reporting say that they occasionally make such prices in order to meet the market and sell their goods. But 80 per cent report that they sell at either the same price abroad as at home, or at higher prices.

It is a fact well known in the commercial world that exports from all countries are often sacrificed in foreign markets wholly irrespective of tariffs at home. The report of the royal commissioner appointed under the act 5 and 6 Victoria, chapter 99, which was made in the British Parliament in 1848, contained the following statement of the exploitation of foreign markets by the manufacturers of that country:

> I believe that the laboring classes generally in the manufacturing districts of this country, and especially in the iron and coal districts, are very little aware of the extent to which they are often indebted for being employed at all to the immense losses which their employers voluntarily incur in their bad times in order to destroy foreign competition and to gain and keep possession of foreign markets.
>
> Authentic instances are well known of employers having at such times carried on their works at a loss amounting in the aggregate to £300,000 or £400,000 in the course of as many years. If the efforts of those who encourage the combination to restrict the amount of labor and to produce strikes were to be successful for any length of time, the great accumulation of capital could no longer be made which would enable a few of the most wealthy capitalists to overwhelm all competition in times of great depression, and thus to clear the way for the whole trade to step in when prices revive and to carry on a great business before foreign capital can again accumulate to such an extent as to be able to establish the competition in prices with any chance of success.
>
> The large capitalists of this country are the great instruments of warfare (if the expression may be allowed) against the competing capital of foreign countries, and are the most essential instruments now remaining by which our manufacturing supremacy can be maintained.

The practice thus reported upon more than fifty years ago in a free-trade country has since been common to all countries, as is conclusively shown by the report of Mr. J. W. Jenks, who investigated the

subject in Europe as an agent of the Industrial Commission. It shows a commerce which is practically independent of tariffs, and which does not seem to be preventable by legislation except on the part of the importing country. The making of lower export prices is a question of business policy, the arguments for and against which are stated by witnesses. It is unpopular and can not be justified unless the benefits to the public are at least as great as those to the exporters.

TARIFF AND WAGES.

Those who advocate the removal of the tariff from goods produced by industrial combinations sometimes overlook the effect which such removal might have upon wages. In most lines not merely the money wages, but also the real or comparative wages, of the American workingmen are 20 per cent to 100 per cent higher than those in the same trades abroad. If duties were removed, or even much reduced, it is asserted that, in order to meet the foreign competition that would follow, the wages of American workingmen would have to be reduced.

Whatever the effect of the tariff may be upon the average rate of wages in the country, there can be no doubt that wages in many trades are maintained by the tariff, and that if the tariff were to be removed these wages would have to be lowered. Although it is often claimed that such higher wages are paid indirectly by other workingmen, who are obliged to consume products manufactured at higher cost, it is still probably true that their own wages would fall correspondingly if there were reductions in the protected industries.

EFFECTS OF TARIFF REMOVAL.

Removal of the tariff, even in any single industry, should not be lightly considered. When the tariff is essential to any industry its removal would doubtless kill not only the combination, but the industry itself, bringing upon the country attendant evils. Even if the industry is not killed, if severe pressure is brought to bear, the industrial combination will not be the first victim, but rather its domestic competitors possessed of less advantages in manufacturing or less financial strength to withstand competition.

The removal of the tariff, then, will not abolish combinations unless it abolishes the industry. The domestic competitors of combinations might be largely cut off by tariff reductions or removal, and the combination survive with moderate profits, and yet be forced to sell its products to domestic customers at much lower prices. But this sharpening of foreign competition by the removal of the tariff would, beyond any doubt, lead American combinations in some cases to enter into international combinations. Already we have the thread industry of England and of the United States, indeed the thread industry of the world, largely in the hands of an international combination.

The borax trade is also organized internationally, and there have been efforts to bring about an international iron and steel combination. In Europe many combinations have crossed national boundaries. The advocates of lowering or removing the tariff in any line of industry should inquire carefully whether its effect might be to produce an international combination, and if so whether such an international trust would be desirable.

The possible effects upon wages of a reduction or removal of duties must also be considered, and the further possibility of admitting to this country the surplus stocks of European manufacturers at rates so low as to seriously cripple our home manufactures. If our manufacturers extend their foreign markets by selling at low rates abroad, they but follow the example of European manufacturers, who for years have disposed of surplus stocks in this country so as to keep their factories going to their full capacity. What can be gained by helping foreign trusts in order to hurt domestic trusts is not apparent.

The disturbance of industry and the unsettling of credits, which invariably follow a proposed general revision of the tariff, has led most of the witnesses to advise against entering upon such a policy until reasons for it are more urgent than at present. If it is deemed desirable to withdraw protection wholly or in part on certain products, such withdrawals should be made with discretion and with whatever compensating advantages can be gained. Far less disturbance to business will follow and much better results will probably be secured, if such modifications of the tariff as seem advisable are made through reciprocity arrangements, which do not in themselves suggest the evils likely to follow a general revision of the tariff. It is not impossible that through diplomatic negotiations and tentative agreements coordinate legislation might be secured which would obviate the difficulty, now felt by many, in changing revenue laws by treaties.

SOCIAL EFFECTS OF COMBINATIONS.

The social effects of combinations have been subjects of general discussion. There can be little doubt that combinations must have their form and method of management finally determined by the general social effects they produce.

If a combination controls 85 or 90 per cent of the market, it has a certain degree of monopolistic power enabling it to affect prices, at least for a time. Naturally the managers of the combinations will strive to secure as large profits as possible, and to retain for themselves the largest proportion of these added gains. As long as rivals can be kept out of business they can maintain high profits. On the other hand, if the independent organizations are strong, and are in a position to increase their output readily, or if new capital by the pros-

pect of increased gains is attracted into the business, the inevitable result will be a fall in the price of goods, and these added profits will be rapidly distributed in the form of lower prices to consumers.

It has been the claim of many of the combinations that, through the economies coming from production on a vast scale and from unified management of plants scattered throughout the country, a combination can permanently produce more cheaply than independent producers, and therefore enjoy higher profits than any independent firm.

If the combination, by virtue of the advantages which it possesses, is able to produce more cheaply than its rivals, it may either keep these savings for itself in the form of higher profits or divide with its wage-earners; or, if compelled to do so by competitors, it may lower the price of the product, and thus distribute the savings among consumers—the general public. The social effects are decidedly different in each case.

When the combination, although effecting large savings, does not lower the prices of the product but distributes these savings in dividends and in salaries, the wealthy classes are the beneficiaries. In such case it is probable that some portion of the savings will be expended in mere luxurious living, or in practices of questionable benefit to society. Or, the added gains of the wealthy may be used in part to increase the refinement, intellectuality, and artistic training of the community, through beautiful art and scientific collections, to which large numbers of the community have ready access. Beautiful and well-managed homes may serve more or less efficiently as models and training schools for others to follow, and have an influence for good upon the community.

Another use, and perhaps the most common for high profits, is the reinvestment of them in business. To what extent this is a direct gain to society is not clear. In the developing stages of society this employment of capital is the best, and it tends most directly to the improvement of the general standard of living. In societies more fully developed, where capital seems to be at times almost a burden to investors, it is not certain that reinvestment is always a benefit to society. The result in many branches of industry may be such an increase in the means of production as to lead to overproduction, which in turn may produce a commercial crisis with consequent waste and suffering. When pressure for reinvestment is so great that undue risks are taken and the speculative element in society is unduly stimulated, much evil may result.

In our own country, especially if the productive agencies are kept fairly well organized, it seems likely that, for the present at least, the reinvestment of capital is a decided social benefit. It still remains true that society will gain more by having this fund distributed through lower prices to consumers or added wages to laborers.

If workingmen throughout an industry are well organized into unions intelligently and efficiently managed, it is probable they will be able to secure for themselves a fair proportion of the savings made by combination. So far as can be judged, this is what happened in the case of the Window Glass Workers' association in their dealings with the American Window Glass Company and the Independent Window Glass Company of Pittsburg. This was also the case, in part at least, with the coal miners. The Carnegie Steel Company and the United States Steel Corporation have paid as high wages in the unorganized as in organized mills. How long they would do it, however, if none were organized, is a question.

If workingmen secure added wages and employ them in providing more refinement in their homes, better education for their children, better training for themselves in their own work, or in securing wider information regarding public questions, society is a material gainer. The result is not materially changed if instead of an increase in wages the gain is one of fewer hours, as the added leisure can be employed in securing the same wise ends, or in adding to money gains by outside work. There are a few exceptions to the good use of more money and leisure, but the rule is almost universal; and from the gain to the workingman there comes a gain to the employer by the increase in the man's producing capacity, which is also a benefit to society.

Whenever, in spite of the combinations, competition on the part of individual establishments or between two or more great combinations still remains, the result is certain to be a lowering of prices. In many cases combination does not result in either higher dividends or higher wages, but merely in lowering prices. So far as this is true, the consumers, of course, receive the benefit. The standard of living is raised so far as the product in question enters into general consumption. If this effect should take place throughout all manufacturing industries, there could be no doubt that we should have an improved standard of living for society as a whole.

So far, the assumption has been made that combination has brought about a saving in industrial energy, so that prices can be lowered without lessening the profits of the producer. It has not been the assumption that the combination was in a position to extort monopoly prices. If we set aside the question of industrial saving, and assume that the industrial combination increases prices through the power of monopoly, the social effect will of course be materially different. If the prices of the products are raised to consumers, to increase profits, and the monopolist makes the gain, it is probable that the standard of living of large classes in the community has been lowered and society has been correspondingly injured. If the public is expected to approve combinations, it must see in them public benefits, wider, indeed, than those which go to a class. If instead of keeping for himself all of the

gains of monopoly, the monopolist divides these gains with his workingmen in the shape of increased wages, it is but a palliation of the injurious effects against society.

It should not be assumed that, in objecting to the gains of monopoly, reasonable returns upon invested capital are meant. It is doubtless a detriment to society if business investments, made with conservative and intelligent care, do not receive a suitable return. When competition is carried to so great a length that practically all investors are deprived of proper returns, society is the loser, although the consumer may be the gainer. A reasonable amount of competition, which shall hold gains down to a moderate return for labor and capital, is one of the greatest forces for the progress of society; but when this competition is carried so far that widespread ruin among capitalists is the result, far more is lost to society than is gained by the consumer. It is to be feared that too often of late years in economic discussion the "forgotten man" is not the consumer, but is rather the intelligent, hard-working producer; and in this country most people are producers as well as consumers.

The best social results will be reached in the long run if the gains of combinations—not those of monopoly, but of saving—shall give to capitalists a modest but sure return upon investments, shall give a goodly portion of the gain to the wage-earner, and shall be distributed in largest part to the consumer in the form of lower prices.

BUSINESS OPPORTUNITIES.

If the influence of industrial combinations shall be to build up classes in the community, this will be their most far-reaching effect. It has been the feeling of many that combinations deprive men, possessed of only small capital, of opportunities for advancement and reduce them to the level of paid servants, while they give to the man of wealth opportunities for exercising industrial power greater than possible before and greater than the welfare of the community would justify.

Opportunity for manufacturers of small means.—It is probably true that a man of small means, who wishes to set up an independent establishment, will find himself handicapped in many ways in competing with a large combination. The various disadvantages to which he will be subject have been brought out in describing the savings of the combinations.

The greater part of the manufacturing in the United States, however, is still done in small establishments and in lines not controlled by the combinations. Manufactures requiring artistic skill to please the taste of consumers—the great clothing trades, the furniture trade, as well as all of the handicrafts—remain entirely outside of the combinations, and the list could be extended almost indefinitely through

many minor lines of manufacture. With probably only a minority of the manufactures of the country controlled by combinations, it would seem as if a person with small capital might readily find opportunities for independent management, if so inclined.

This is particularly true if one will produce a specialty or is willing to take advantage of special opportunities. The United States Steel Corporation, the greatest of all the manufacturing combinations, has competitors, and since its organization many of them have increased their capital stock and facilities. Some probably expect merely to follow the prices of the combination or perhaps to sell out, but even a small establishment of $200,000 capital, whose raw material is largely scrap steel, claims that it has no reason whatever to fear the power of the great combination, owing to its special line of work.

It seems to be reasonably well established that when attempts are made to organize combinations in lines of manufacture where a comparatively small capital is needed to start in the industry, or when the success is not dependent upon brands, saving in cross freights, or similar advantages, the combination is less likely to prove successful than the smaller establishment. The wall-paper combination proved a failure, although its management was apparently good, and most of its plants have been sold back to the original owners. It was thought that the combination was at a disadvantage in dealing with its workingmen and with customers, and the hopes of saving from the combination proved largely illusive. The cordage combination was a failure also, although the reasons for the failure were somewhat different. It is probable that the speculative element entering into the cordage business was a contributing factor. Hemp is brought long distances, and one of the chief products—binder twine—is sold for only a short season of each year. The demand also depends largely on the uncertainty of crops, so that the business is necessarily speculative.

Opportunities for young men of capacity to rise.—It has been urged frequently that young men capable of becoming, in course of time, heads of independent establishments would be debarred from such opportunities by the formation of the great combinations, and that confidential positions in the combinations would be given to relatives of the officers and larger stockholders, so that ability would not be sufficiently rewarded. It is as yet too early to pass judgment in this regard. At present, nepotism in business appointments seems to be found less frequently in the great combinations, than in establishments owned by few men. In the case of a partnership, especially in Europe, a business is likely to be handed down from father to son through generations, even though the son does not show any marked aptitude for the business. When, however, a number of partnerships are grouped into one great combination, and the ownership is put into the form of a corporation, and thus becomes widely distributed, the

demand for efficient management comes from many different sources. In some cases one or two of the largest stockholders may secure the appointment, for personal reasons, of men of only fair ability when abler men might readily enough be found, but such cases are the exception rather than the rule.

If one looks through the lists of officials and directors of some of the greatest railroads or industrial combinations, he will find one or more names of relatives of the most influential managers. In the New York Central railroad, for example, one or two Vanderbilts remain, but they are known to be men of great financial ability, and one Vanderbilt has been willing to take a subordinate mechanical position and run the risk of working his way up. The relatives of some of the other wealthy families have positions of importance, but unless thoroughly competent, their positions are chiefly honorary and do not affect materially the management; they seldom stand in the path of promotion of abler men. It has frequently been asserted before the Commission, by persons familiar with the industrial world, that never before in their experience has there been so strong a demand for men of marked ability as at the present day, and never before were the rewards so great. A large industrial combination in order to hold its own against the competition of rivals must be efficiently managed. Probably nowhere else is what may be called, by analogy, the "civil-service system of promotion," so rigidly followed as in the case of these great corporations.

Such seem to be the results of combination thus far. No one knows whether these results will be permanent. All methods of doing business, all social institutions of whatever nature, tend to fall into grooves of procedure. There is some reason to expect that the methods employed by industrial combinations will lack the flexibility of those followed by individuals or small concerns; that as they will be managed more and more in accordance with fixed rules, the same high order of intelligence will not be needed for their administration, and a form of routine will be found which will permit second-rate men to hold permanent positions and prevent first-rate men from succeeding. If this is prevented it will be by the pressure of competition, either actual or potential. If inefficiency creeps into a manufacturing establishment, it is practically certain that some enterprising rival will take the field. If our industrial combinations were legal monopolies, there would be reason to fear stagnation; but as they are not, they must hold their own against individual enterprise.

Opportunities for wage-earners.—As industry becomes more and more concentrated, the number of employers is lessened, but it does not appear that thereby the wages of laborers have been lowered. One of the greatest benefits to come from industrial combinations is the ready adaptation of the supply of goods to the demand for

them. The leading combinations of Europe and some in this country seem to have put this economy into practice. Consequently production has been more regular than before, the danger of commercial crises from overproduction has been lessened, and greater regularity of employment given to workingmen.

Separation of society into classes.—It is thought by many that industrial combination tends toward the wider separation of society into classes. On the contrary, the standard of living among the poor and among people of moderate income has risen, and the differences between social classes, so far as actual comforts or means of culture are concerned, are rapidly lessening. The improvements in methods and reductions in cost of production tend to elevate the standard of the life of the poor and to bring them more nearly to the level of the rich in all of the essentials of higher culture.

EFFECT ON DISTRIBUTION OF WEALTH AND ECONOMIC POWER.

Distribution of wealth through ownership of stocks.—Attention has frequently been called to the fact that, as several partnerships or small corporations are merged into a large corporation, the stocks become more widely scattered. Sometimes the combination of establishments owned by 100 or 200 men will increase the number of stockholders to thousands. Witnesses before the Industrial Commission have frequently spoken of this as a more widespread distribution of wealth. There are no available statistics on the subject, but common observation and a careful analysis of the methods of the large corporations fail to confirm this view.

Although in many of the combinations the number of stockholders is large, the exercise of power is entrusted to comparatively few men. If twenty different establishments of comparatively equal strength were to combine, it is probable that within a comparatively short time the control of the combination would be in the hands of a few men. Although the number of stockholders may have been increased a hundredfold, and the wealth distributed thereby, the actual controlling power would have been greatly concentrated; this exercise of power, however, must be with the consent of the stockholders.

EXISTING LEGISLATION.

ENGLAND.

In recent years England has enacted no laws on the subject of industrial combinations. The common-law doctrines regarding monopolies and restraint of trade hold at the present day. It has been the practice of the English courts, however, with substantial uniformity, to decide that contracts in only partial restraint of trade, if reasonable, are valid. Some late decisions bearing upon the question of modern

combinations which showed an apparent intention of suppressing competition on the part of their rivals, even seem to recognize that such combinations may be in the public interest.[1] There is apparently no disposition to prevent the combination of corporations.

England has, however, for a great many years attempted to exert rather strict supervision over corporations of all classes. The law of 1862, as amended from time to time, provided for a registrar of joint stock companies. Every corporation was compelled to file with the registrar its articles of incorporation, and also copies of all contracts made with different vendors for the purchase of their properties, when such purchases were to be paid for in stock. Rigid provisions were inserted regarding the duties and the liabilities of promoters and directors, with the intention of giving investors and stockholders full information regarding the nature and conditions of the business.

As time went on, the lawyers found various ways of evading the purpose of this law, while living up to its letter. In consequence it seemed desirable to pass new amendments to meet later conditions. Various committees of the board of trade and of the Houses of Parliament, assisted at times by experts in business and corporation law, made a careful study of the abuses under the old law and the best remedies therefor. In August, 1900, extensive amendments to the corporation law were passed which, it is thought, will prevent most of the abuses that had made themselves manifest.

It will be noted that these amendments have been passed since the organization of many of the largest English industrial combinations, and the intention is to prevent abuses from them as well as from smaller corporations.

FRANCE.

For many years the penal code of France has prescribed heavy penalties for coalition which should affect the prices of commodities in the market against the interests of the public, especially if the means employed were in any respect fraudulent. Various cases, decided at different times, have shown that the French courts interpret this article broadly, and that under the word "commodities" they class the stocks of corporations, and other kinds of intangible as well as tangible property. While it is the opinion of many French lawyers that an industrial combination can be formed so as to avoid the penalties of these sections of the penal code,[2] it remains true that business men fear that they may incur the penalties of this article; in consequence, any agreements regarding prices are likely to be kept secret, and are usually quite informal in their nature, often being mere unwritten understandings. On the other hand, combinations have been

[1] Mogul Steamship Company *v.* McGregor, Dow & Co., 1892, Appeal Cases, 25.

[2] See Reports of the Industrial Commission, Vol. XVIII, p. 188.

formed with a joint selling bureau, whose managers believe that they are acting entirely within the law. There seems little doubt that further interpretations of these articles of the French penal code with reference to the modern industrial combinations must be given before the law can be considered settled.

The corporation law of France requires a good degree of publicity as to the form of organization, the profits of promoters, the value of the property taken in exchange for stocks, the actual conduct of the business, the profits or losses made, and other similar matters. Directors and managers are held also to a strict accountability. There has been, in spite of these somewhat careful provisions of the corporation law, much speculation in France, but, generally speaking, the evils of stock watering are less than they have been in the United States.

GERMANY.

There has been no legislation whatever in Germany on the subject of industrial combinations. In general, the law provides for liberty of contract, and, as is usual, the courts would not uphold contracts contrary to good morals. Very many contracts have been made between industrial establishments in the way of fixing the output and of regulating prices. Lawsuits have been brought to enforce the contracts, and the defense has at times been made that they were in restriction of freedom of trade. The courts have distinctly taken the position, as appears in the volume on Industrial Combinations in Europe,[1] that a contract placing reasonable restrictions upon one's own actions, in order to prevent demoralization of business, is contrary to neither good morals nor freedom of trade, as that is understood in the law. Quite the reverse, it has been held that such contracts might be in the interest not merely of the parties, but also of the public. The courts have also declared that the interests not only of the consumers should be kept in mind, but the interests of the producers as well.

The German laws regarding corporations are, however, very full, and are quite rigid as regards the methods of promotion, the restriction of capitalization, the responsibility of directors to the stockholders, and matters of that kind. In consequence, watering of stock to any injurious degree is practically impossible. The profits of the corporation promoter must be accurately stated, so that all purchasers of shares may know what they are, and the acts of the directors are, generally speaking, made considerably more open to the public than in this country. These provisions have prevented many of the abuses that have arisen in the case of American corporations, both small and large.

The Government of the German Empire, as well as that of Prussia,

[1] See Reports Industrial Commission, Vol. XVIII, p. 164.

has been questioned in Parliament at different times with reference to the desirability of passing laws restricting the acts of the combinations. The Governments so far have seemed to believe that the combinations have not been contrary to the interests of the public, but they express the intention of keeping a strict watch over them, and in case of need, of putting into the laws certain restrictive provisions to prevent abuses. The German and Prussian executive departments have already collected much material regarding industrial combinations in both Germany and foreign countries, so as to have a basis for action.

AUSTRIA.

The situation in Austria is more nearly like that in the United States. Combinations have been formed there very freely, and public opinion has become rather hostile to their activity. The Austrian Government is probably more responsive to the pressure of public opinion than is that of Germany, so that more active measures have been taken looking toward restrictive legislation.

In 1897, owing to the fact that the combinations among the brewers, distillers, sugar refiners, and others, whose products were subject to an internal-revenue tax, seemed likely by increasing the prices of their products to lessen consumption and therefore to lessen the internal-revenue tax, the department of finance offered a bill providing for quite rigid supervision of these combinations, and giving the Government certain arbitrary power to prevent gross abuses. Because of the political difficulties in Austria, the bill has not been passed.

Meanwhile, the department of trade and commerce, through a special committee, has been making a detailed study of the question, and this committee has reported to the department, making recommendations as follows:

(1) The combinations should be recognized as legal organizations and brought into regular legal form.

(2) Every combination should be required to report its condition and its form of organization to a combination board, authorized to act as a judicial body, and take charge of the registration of the combinations. This combination board would also act as a court of first instance for the settlement of all legal difficulties arising out of the organization and activity of the combinations.

(3) For the restriction of monopolistic tendencies, through the setting aside or limitation of free competition.

(4) For a suitable revision of the import duties and of state railway freight tariffs; and that organizations opposed to combinations should likewise be encouraged. (Possibly trade associations.)

(5) The creation of a monopoly or combination council, which would be considered as a consultative organ of the ministry of commerce, to

deliberate and decide upon measures of administration touching this question.

(6) That a bill be worked out in detail embodying these principles, to lay before the legislative committee for its consideration.

It will be noted that this is not as yet legislation, but only a step toward it, taken after due study by experts. It seems probable that in the not distant future there will be some legislation along these lines.

The Austrian law regarding corporations has not been satisfactory, because it has left a large amount of discretion to a governmental board. Business men preferred a law with definite provisions, so they might know accurately what to count upon in any attempt to organize a corporation. To meet their wishes the Government in 1899 issued a decree laying down conditions under which it would issue articles of incorporation. This decree is subject to revision at any time by the Government without action of the legislature, and is not satisfactory. It may be noted as indicating the inclination of Austrian business men and of the Austrian Government regarding corporations, that this decree has given for the time being a form of organization and administration quite similar to that of the German law. It is probable that, should new legislation as to corporations be secured, it would in the main follow the German model.

Austrian combinations meanwhile are adopting agreements regarding output and prices, and are only rarely taking the form of single corporations. The reason for this hesitancy to take the corporation form is partly the fact that the corporation law requires a great degree of publicity, and partly that taxes on corporations are unusually burdensome.

UNITED STATES.

In the United States there has been much legislation regarding industrial combinations, but very little that seems to have had much effect. Under the common law our courts have quite generally declared contracts in restraint of trade invalid whenever these contracts were general or whenever they seemed unreasonable. A summary of the results of such legislation and decisions may be stated substantially as follows:

1. Practically all of these statutes were framed with the same purpose in view: To prevent the formation of combinations in trade which might become dangerous to the public and to destroy such as already exist. In a few cases an attempt is made through special powers granted to prosecuting officers to secure information regarding these organizations, and to proceed against them if they are seen to be monopolies in the common-law sense.

It is a striking fact that not one of these statutes aims especially at securing publicity regarding the business of the large industrial com-

binations, through detailed reports. in order that the publicity itself may prove a remedial measure.

2. In several of the States an attempt has been made to exempt from the heavy penalties of the law dealers in certain products (agricultural products and live stock) and certain classes in the community (the farmers and laborers) on the ground that such combinations are not injurious to the public.

3. The common law is sufficient to enable learned judges to protect the welfare of the people against monopolies that can be clearly proved to be against public policy. The proof needed to establish monopoly seems to vary somewhat with the locality.

4. The statutes, by defining in specific terms, referring to modern conditions, what is the act objected to, put people and prosecuting officers more on the alert regarding their rights and duties. It is probable, too, that through the statutes the principles of the common law are fitted more rapidly into modern conditions, and that they have been somewhat extended. The principal change seems to be that whenever, under the common law, contracts in partial restraint of trade, when reasonable, would be upheld, under these new statutes all such contracts, even if reasonable, are invalid.

Possibly the fear of a new form of business organization may have led to the extension of legal interference with private business beyond what the public welfare demands. Some of the statutes, if read literally, would seem to forbid many perfectly innocent associations among individuals; but the courts have invariably assumed that only monopoly—at least virtual monopoly—was attacked, and the decisions have been made accordingly. The courts in most instances have not entered upon the discussion of the more difficult question as to whether the monopoly was against public policy, but in some few cases that has formed the basis of the decision.

5. The courts, both state and national, very generally uphold the anti-monopoly statutes. Those declared unconstitutional have been generally so declared on only minor points, which could readily be changed in subsequent statutes, but a late decision in the United States circuit court holds exceptions of special classes unconstitutional.

6. There is a tendency on the part of the courts to put combinations of labor and of capital into the same class before the law, unless special exceptions have been made.

Such results are certainly not satisfactory as regards the prevention of abuses of combinations.

The corporation laws of the several States of the United States have been very generally drafted so as to encourage as much as possible the organization of corporations.

It is important to observe that whenever any State has put conservative restrictions upon corporations, either as to their formation or their

management, other States have taken advantage of the situation and enacted such liberal laws that corporations have removed to them from other States. Two or three States have apparently, for the sake of securing a certain revenue easily collected, bid against each other by offering more liberal inducements to corporations.

This demoralizing tendency in corporation legislation, and the great variety of corporation laws in our forty-five States and four Territories, makes the task of controlling large corporations exceedingly difficult. The Federal Constitution does not permit any State to interfere with commerce between the States, so that, however wise and careful one State may be in its corporation legislation, it can not prevent interstate-commerce corporations of other States from engaging in interstate commerce, though it may practically exclude or regulate manufacturing corporations and all other corporations whose business is of a local or domestic nature; that is, it may regulate or exclude substantially all corporations except those which are engaged in interstate or foreign commerce and those which are in the employ of the General Government.

PROPOSED LEGISLATION.

In its preliminary report on industrial combinations the Commission declared it desirable that the powers of the Interstate Commerce Commission be increased in order to prevent abuses from discriminations in freight rates.

The Commission also recommended corporation laws which should provide for a greater degree of publicity regarding the affairs of corporations, and for a greater degree of responsibility on the part of promoters and officers. Such improved corporation laws in even some of the States, although they could not be made general, would be beneficial; but it is generally recognized that unless the provisions can be made of general application throughout the United States the effect of such legislation must be limited.

Federal supervision, under some form, which may control the combinations doing an interstate business, is therefore of chief importance.

In securing such Federal control any one of three plans may be followed. The legal bearing of these three plans is discussed in detail by Mr. Stimson, the counsel of the Commission, in an opinion appended to the present report,[1] which is followed by a statement of Prof. E. W. Huffcut regarding the constitutional aspects of Federal control of corporations.[2] All of these methods, of course, must refer to the regulation of interstate commerce, inasmuch as that field only has been placed by the Constitution under the jurisdiction of Congress.

First. Congress may relegate to the States its power of control

[1] See page 686. [2] See page 712.

over interstate commerce, thus enabling each State to determine the conditions under which State corporations engaged in interstate commerce may do business within their boundaries.

Second. Congress may provide a Federal corporation law under which all corporations doing interstate business must be organized. In such a law Congress may make whatever provisions seem to it wise for the regulation and control of these corporations.

Third. There may be some modification of our present laws, which, by regulative measures, will define the control of Congress over corporations engaged in commerce between the States and with foreign nations.

The economic as well as the legal influence of these respective methods of regulation would materially differ. The plans themselves should perhaps be outlined in some detail.

PLAN FIRST.

Under the first plan proposed, the power of regulation of interstate commerce would be relegated by Congress to the separate States. From the legal point of view such a remedy may be possible. To allow, however, each separate State to fix its own regulations for interstate commerce within its borders, would, it is clear, result in a great variety of laws more or less conflicting in their nature, which would materially hamper business.

Some States where there is a strong anti-trust prejudice might go to the length of denying to large corporations obnoxious to their views the right to engage in business in the State at all. Moreover the purpose of such legislation might be easily evaded. The corporation might sell its product, or portions of it, to an individual who could bill the goods all over the United States; there would be no constitutional method of preventing this.

From these reasons it would seem that, at any rate until other methods had been tried, it would not be advisable to adopt this plan, as great confusion of legislation would result.

PLAN SECOND.

The second method indicated provides for a Federal corporation law, under which any corporation engaged in interstate commerce may be organized. Doubtless the law might, if it seemed best to put it into such form, make such provisions for taxation of State corporations engaged in interstate business, that all interstate business of corporations would of necessity fall into the hands of corporations organized under this Federal law.

The legal and economic results of such a complete—even such a revolutionary—change in methods of doing business could not fail to be very great. While there is no trustworthy statistical information on

the subject, there can be no doubt that a very large percentage of all the business done in the United States is more or less directly connected with interstate corporations or with corporations doing an interstate business. A provision requiring incorporation under Federal law would therefore remove from under the jurisdiction of our State officials—legislative, executive, and judicial—a very large portion of the business done in the country and place it under the supervision and control of Federal officials.

It has long been considered a fundamental principle of our Government that the States should retain a considerable proportion of the legal supervision of business. In the main, at the present time, the various civil rights of our citizens, including those rights which come under the law of contracts, are in the hands of the separate States. The change suggested under this second plan, while it may eventually be necessary, would prove centralizing to a degree to most people unthought of, in connection with our form of government.

Aside from the immediate economic effects that would be thus produced toward strengthening the principle of combination itself and thus centralizing more and more the business of the country, the effects upon our judicial systems would be none the less marked.

The removal of so large a proportion of the legal business from the State courts to the Federal courts would require a large increase in our Federal judiciary. For some years to come there would doubtless be much disturbance of business on account of this change in legal procedure. On the other hand, there would be a compensation, because, instead of forty-five or more different courts deciding questions along the same line, the decisions would really all be of one system of courts working through its different branches, all of them practically bound by decisions of one court of appeals.

As business is concentrating, however, it is worth while to note that if a method of regulation such as is suggested under plan third should prove inefficient, there would be no break in the continuity of legislation if later it should seem advisable for Congress to take the next step indicated under plan second, and provide for a system of Federal corporation laws, under which should be reorganized part or all of the corporations doing interstate business. Should that be done, these corporation laws should be sufficiently rigid, as regards methods of organization and promotion, as regards principles to be followed in fixing capitalization, as well as concerning the responsibility of promoters and directors; and an adequate degree of publicity should be given to the conditions of business, as set forth in detailed annual reports.

PLAN THIRD.

The evils of combination, remedial by regulative legislation, come chiefly from two sources: (1) the more or less complete exercise of the

power of monopoly; (2) deception of the public through secrecy or false information.

The remedies for monopoly might be (1) the destruction of the corporate monopoly by direct action of the Government; (2) immediate control by the Government of the business of the monopoly; (3) return of part or all of the monopoly gains to the people by appropriate taxation; or (4) the removal of the cause of monopoly by the removal of any special privilege through which monopoly becomes possible or injurious.

The remedy for deception of the public is publicity and responsibility of officials.

1. Many have thought that injurious monopoly on the part of our industrial combinations might be destroyed through the destruction of the business itself by forbidding to such combinations the use of the mails. Such a provision would practically destroy the business of any great corporation, and would, therefore, result indirectly in destroying the monopoly. In its discretion Congress might forbid to such corporation the use of the mails for sending certain classes of mail matter which were thought especially to aid the corporation in its injurious business.

2. It has often been suggested, in regard to public utilities like the railroad or telegraph, that the Government purchase and manage the business. In that way any gains that came through monopoly would, by lessening taxation, come to the public in general; or, if it seemed wise to the Government, instead of making large profits, to reduce charges to a mere nominal sum, it might in that way give to the public the benefits of monopolistic control. Practical experience in other countries seems to show that, wherever the Government has taken the control of the railroads, telegraphs, or natural monopolies, it has not always made such enterprises pay their expenses, but sometimes they have paid large profits to the Government, thus lessening taxation in other directions. There is logically no reason why, if Government operation is desirable as to railroads and natural monopolies, it should not be made to apply to monopolies coming from patents, or to capitalistic monopolies whose chief advantage is that of great capital shrewdly handled. The practical difficulty in such case is connected with the question whether the Government itself is likely to manage such business in the interests of the people, or whether the public will demand such action.

The present discussion, dealing especially with capitalistic monopolies, need not be extended in this connection. Certainly, until the United States should think it wise to assume ownership and management of telegraphs and railroads, it would not be practical or wise for it to undertake the operation of any of the capitalistic monopolies.

3. It may perhaps be found in the public interest to support our

public burdens by levying more of the taxes upon those who, for whatever reason, have monopolistic power, and for private gain levy tribute through monopoly prices upon great masses of consumers. But in such case care should be taken that the taxation should not ultimately be borne by the people.

It would seem entirely competent, if it should be thought wise, for our Federal Government to levy a franchise tax upon corporations engaged in interstate commerce. Congress, beyond question, has entirely within its control the regulation of interstate commerce. It is also clear that this control may be used for the purpose of raising revenue, and, incidentally, for the purpose of preventing any injury to the public, or of furthering the public welfare.

Congress may, therefore, in its discretion, besides levying a tax upon them, lay other conditions, without the fulfillment of which State corporations would be forbidden to engage in interstate commerce. It may prescribe conditions which would in all probability prevent many, if not most, of the abuses which come from our great combinations, so far as they are engaged in interstate business. If it appears that the danger of monopolistic power increases with the size of corporations and the extent of their business, a franchise tax might readily be made progressive in its rates, and thus give back to the public, through this partial bearing of the burdens of government, some of the gains of monopoly. Even if it were not felt that the greater corporations were more injurious to the public than the smaller, a progressive franchise tax might properly be levied, on the ground that the larger corporations have a decided advantage in the conduct of business, so that a higher rate of taxation would not be to them more burdensome than a lower rate to a smaller rival.

Such laws, either for levying a tax or for carrying out prescribed conditions in connection with corporations doing an interstate business, would of necessity require a special bureau for their administration. This body might be made a bureau in the Treasury Department. Such a bureau would secure all information requisite for the just and certain collection of the franchise tax. Such a franchise tax, in order to meet both the revenue needs of the Government and the desirability of careful supervision, should be levied annually, and should presumably be determined in amount by some relation to the net receipts of the corporations. The assessment and collection of the tax would require the bureau to ascertain from the corporation its plan of organization, its methods of doing business, and the character, extent, and results of its operations in considerable detail. The bureau would, therefore, of necessity be compelled to require detailed annual reports from the corporation, and would need to possess the power of inspection to any degree required in order to guarantee the accuracy of the returns.

Besides giving back to the public some of the possible gains of

monopoly through taxation, such a bureau might also prevent to a great degree deception of the public by the corporations through secret methods of organization or through false information. The reports made to the bureau would doubtless, to a considerable extent at least, be made public; and even if this did not seem to be advisable, a corporation would still find it difficult to deceive the public as long as Government officials themselves, even though sworn to secrecy, would know continually the exact conditions of the business.

It would also be entirely competent for such a bureau to be given as one of its functions the duty of securing and furnishing to Congress for its information, with reference to possible future legislation, such details regarding the business of the corporations themselves and their relation to the public welfare, as well as information regarding the general industrial conditions of the country, as would enable Congress to act wisely. This information, of necessity to a considerable degree public in its nature, would furnish the check to injurious action on the part of the combination, which has in many cases been claimed for mere publicity.

4. The abuses most frequently complained of, so far as they relate to special favors to industrial combinations, have been freight discriminations on the part of railroads. The removal of such discriminations has been the subject of legislation in connection with the Interstate Commerce Commission. In another connection the Industrial Commission has already dealt at length with the subject of interstate commerce. It may be added that, if a system of franchise taxes upon corporations engaged in interstate business should be instituted and carried into effect through a Government bureau created for that purpose, it would become much easier to secure detailed information which would prevent railroad discriminations.

In a somewhat similar way the question of a revision of the tariff would be met. The great evil ordinarily feared in connection with tariff legislation is the disturbance of business which comes from revision of so many of the tariff schedules, under pressure brought to bear by interested parties. A bureau dealing continually with all corporations engaged in interstate business would also deal with their business with foreign countries. In fact, it would of necessity become the one governmental body most familiar with business and commercial conditions. In consequence, it would be peculiarly fitting that such a bureau should be given the duty of recommending, from year to year, such minor changes in the tariff schedules as would tend both to further the business and labor interests of the country. Minor changes coming thus from time to time through the recommendation of such a bureau would not disturb business in the same degree that a general revision by Congress of the tariff schedules does. On the other hand, inasmuch as Congress would have, of necessity, to pass upon the recommenda-

tions of such a bureau, there would be no danger that local interests in different sections of the country would not be well represented.

Under the third plan, therefore, of direct regulation by Congress, it would seem that it is legally practicable, and that it would promise well from the economic point of view, to put upon corporations doing interstate commerce restrictions of such a nature that, without hampering business to any injurious degree, abuses connected with the great industrial combinations might be prevented.

Besides the provisions for publicity already mentioned, it would be competent for Congress to prescribe that before this bureau should grant permission to any State corporation to engage in interstate business, it should be satisfied that the corporation has met prescribed conditions regarding the extent of its capitalization, or even regarding its methods of doing business.

RECOMMENDATIONS OF THE COMMISSION.

Early in the year 1900 this Commission submitted to the Congress a preliminary report of findings and recommendations on the subject of industrial combinations. Said report was in part as follows:

To prevent the organizers of corporations or industrial combinations from deceiving investors and the public, either through suppression of material facts or by making misleading statements, your Commission recommend—

(*a*) That the promoters and organizers of corporations or industrial combinations which look to the public to purchase or deal in their stocks or securities should be required to furnish full details regarding the organization, the property or services for which stocks or securities are to be issued, amount and kind of same, and all other material information necessary for safe and intelligent investment;

(*b*) That any prospectus or announcement of any kind soliciting subscriptions, which fails to make full disclosures as aforesaid, or which is false, should be deemed fraudulent, and the promoters, with their associates, held legally responsible;

(*c*) That the nature of the business of the corporation or industrial combination, all powers granted to directors and officers thereof, and all limitations upon them or upon the rights or powers of the members, should be required to be expressed in the certificate of incorporation, which instrument should be open to inspection by any investor.

The affairs of a corporation or industrial combination should be carried on, without detriment to the public, in the interest of its members and under their lawful control. To this end the directors or trustees should be required—

(*a*) To report to the members thereof its financial condition in reasonable detail, verified by a competent auditor, at least once each year;

(*b*) To inform members regarding the method and conduct of business by granting them, under proper restrictions, access to records of directors' meetings, or otherwise.

(*c*) To provide for the use of members, before the annual meetings, lists of members, with their addresses and their several holdings; and

(*d*) To provide, in whatever other ways may be named in the certificate of incorporation, means whereby the members may prevent the misuse of their property by directors or trustees.

The larger corporations—the so-called trusts—should be required to publish annually a properly audited report, showing in reasonable detail their assets and liabilities, with profit or loss; such report and audit under oath to be subject to Government inspection. The purpose of such publicity is to encourage competition when profits become excessive, thus protecting consumers against too high prices and to guard the interests of employees by a knowledge of the financial condition of the business in which they are employed.

The further consideration given to the subject by the Commission has justified in nearly all particulars our former conclusions and recommendations. Since that report was made, combinations and their methods, both here and in Europe, have been more thoroughly studied. The influence of combinations in the United States in extending our foreign trade and the methods and influence of foreign combinations in competition with them have been observed. These matters are presented in accompanying volumes.

We now further recommend—

1. That district attorneys of the United States be authorized and directed to institute proceedings for violations of the Federal antitrust laws.

2. That combinations and conspiracies, in the form of trusts or otherwise in restraint of trade or production, which by the consensus of judicial opinion are unlawful, should be so declared by legislation uniform in all jurisdictions, and as to all persons, and such statutes should be thoroughly enforced.

3. That stringent laws be enacted by the Congress and the several State legislatures, making both penal and criminal the vicious practice of discriminating between customers, and cutting rates or prices in one locality below those which prevail generally, for the purpose of destroying local competition; and that such laws should give to any person damaged the right to sue for and recover prescribed penalties, and make it the duty of prosecuting officers to proceed against the offenders.

4. That to prevent overcapitalization, the several State legislatures enact laws similar to the anti-stock-watering laws of Massachusetts; also to provide for State supervision of all public-service corporations, with power to recommend or regulate rates for service and to pass upon the public need, desirability, or exigency of any proposed new service.

5. That Plan Three—Federal taxation and supervision—heretofore outlined, be adopted, and to accomplish its purposes—

(*a*) That an annual franchise tax be imposed upon all State corporations engaged in interstate commerce, calculated upon the gross earnings of each corporation from its interstate business; that the minimum rate of such tax be low, but that the rate be gradually increased with increases in earnings.

(*b*) That there be created in the Treasury Department a permanent

bureau, the duties of which shall be, to register all State corporations engaged in interstate or foreign commerce; to secure from such corporations all reports needed to enable the Government to levy a franchise tax with certainty and justice, and to collect the same; to make such inspection and examination of the business and accounts of such corporations, as will guarantee the completeness and accuracy of the information needed to ascertain whether such corporations are observing the conditions prescribed in the act, and to enforce penalties against delinquents; and to collate and publish information regarding such combinations and the industries in which they may be engaged, so as to furnish to the Congress proper information for possible future legislation.

The publicity secured by the governmental agency should be such as will prevent the deception of the public through secrecy in the organization and management of industrial combinations, or through false information. Such agency would also have at its command the best sources of information regarding special privileges or discriminations, of whatever nature, by which industrial combinations secure monopoly or become dangerous to the public welfare. It is probable that the provisions herein recommended will be sufficient to remove most of the abuses which have arisen in connection with industrial combinations. The remedies suggested may be employed with little or no danger to industrial prosperity and with the certainty of securing information which should enable the Congress to protect the public by further legislation if necessary.

6. That, if a department of commerce and industry shall be established, one of its functions should be to call attention from time to time to such economic changes in the world's progress as may suggest tariff modifications, and also to such commercial opportunities as may suggest reciprocal legislation or arrangements, and furthermore to any evils incident to combinations which changes in the tariff will correct.

7. That, in view of the extent and perfection of our manufactures, of our growing export trade and the sharp competition it encounters in foreign markets, of the practice by some exporters of making lower prices abroad than at home, and of the desirability of protecting the consumer as well as the producer, without awaiting other legislation, the Congress provide for a commission to investigate and study the subject, and to report as soon as possible what concessions in duties may be made without endangering wages or employment at home, what advantages abroad may be obtained therefor, and also to suggest measures best suited to gain the ends desired.

If experience shall prove that these remedies are not sufficient to properly control the great corporations and combinations, it may be wise for the Congress to enact a Federal incorporation law. Should

such a law be enacted, it would then be possible to increase the franchise tax upon State corporations engaged in interstate commerce so as to compel them to reorganize under the Federal law. When organized under a Federal law, it would be possible, as has been pointed out, to apply to corporations any degree of publicity or restriction that might be authorized. In the meantime the separate States should amend their corporation laws so as to require greater publicity, as outlined in our preliminary report.

The evils of discriminations in freight rates and their influence in aiding and promoting monopolies have been clearly shown. The recommendations of the Commission relative thereto will be found under "Transportation."

ALBERT CLARKE, *Chairman.*
BOIES PENROSE.
THOMAS R. BARD.
*JOHN J. GARDNER.
JNO. C. BELL.
THEO. OTJEN.
WM. LORIMER.
ANDREW L. HARRIS.
JOHN M. FARQUHAR.
†THOS. W. PHILLIPS.
EUGENE D. CONGER.
C. J. HARRIS.
J. L. KENNEDY.
CHAS. H. LITCHMAN.
D. A. TOMPKINS.

*With a reservation as to the phrase in No. 2, "which by the consensus of judicial opinion are unlawful," and with the suggestion to strike out the word "so" before "declared," and to insert the word "unlawful" after it.

With a reservation as to all of No. 4, after the word, "Massachusetts" in line 2.

With a reservation as to No. 5, because it does not define what classes of corporations are included in the recommendation. Trusts are the subject under discussion, but the words of the recommendation include, for example, an incorporated messenger service.

J. J. GARDNER.

† SUPPLEMENTARY STATEMENT OF THOMAS W. PHILLIPS.

I can not concur in the historical review, because it embraces statements and conclusions for which there does not appear to be full warrant in the testimony. While indorsing and approving the remedies suggested for the evils enumerated, I believe the Commission's

report should contain more specific deductions from the testimony, and should contain either drafts of bills, or points sufficiently elaborated for incorporation in bills, to serve as guides for legislation by Congress and the several State legislatures. This procedure is imposed upon us by the law which created the Commission, as follows:

SEC. 2. That it shall be the duty of the Commission to investigate questions pertaining to immigration, to labor, to agriculture, to manufacturing, and to business, and to report to Congress and to suggest such legislation as it may deem best on these subjects.

SEC. 3. That it shall furnish such information and suggest such laws as may be made the basis for uniform legislation by the various States of the Union, in order to harmonize conflicting interests and to be equitable to the laborer, the employer, the producer, and the consumer.

Although not designated in the law, the subject of trusts was found to be so vast in its direct effects upon "labor, agriculture, manufacturing, and business," as to be made a matter of investigation by the Commission as a whole. The Commission would therefore fail in the purpose of its creation did it not fully examine this subject, and, if evils be found which may be lessened or removed by legislation, suggest specific and adequate measures therefor.

In considering the trust question a fundamental distinction must be made between the aggregation of capital, commensurate with the economical conduct of the business in which it is employed, and those vast accumulations of capital in single corporations or in combinations of corporations which either possess or aim to possess a monopoly of the industry in which they engage. There is no difference whether this capital is in a single corporation or a combination of corporations if the aim is to secure and maintain monopoly. The vice and danger lies in the monopoly, not in the form of its creation, nor in the size of the establishment.

Those corporations and all combinations of capital intended to secure the advantages which come from a perfect division of labor and the economical management of any business in which they engage, but which do not aim at monopoly, are not only unobjectionable, but are necessary to our industrial growth. The benefits flowing from them are so obvious and they have been so frequently stated that time need not be taken in restating them. There is no apprehension in the public mind of evil from corporations simply as such.

No report will be complete or satisfactory to the people that does not deal with the methods by which the oldest and strongest trusts have been developed. In this way alone can we understand the dangers to be avoided in dealing with the more recent combinations that look upon the history of the older combinations as their model.

FREIGHT DISCRIMINATIONS.

From the investigations of the Commission it is apparent that the most potent factor in establishing and maintaining monopolies has been

preferential or discriminating rates of freight by common carriers given by rebates or otherwise. One of our oldest monopolies, though not nominally in the hands of a single corporation or trust, is that which controls anthracite coal. This business furnishes a conclusive proof of the power of the railroads through discriminating rates to establish a monopoly. The facts with respect to this have been very clearly brought out in the report of the Industrial Commission on Transportation. Mr. H. G. Brooks, an independent coal operator of Pennsylvania, testifies (Vol. XII, p. 163) that 43,000,000 tons of anthracite coal are yearly carried by rail to market at three-fourths cent per ton per mile in excess of the rates charged for carrying bituminous coal. This is $322,500 per mile of excess charge for the year's product, or $46,762,500 annually for the average haul of 145 miles to the general market, or over $1 a ton. This overcharge, which is greater every year than the interest on our national debt, is made possible by the railroad monopoly, now euphoniously called "community of interests," and by the limited area of the hard coal supply. By discriminating against independent operators the railroads have forced them to sell their properties, until, at the present time, more than nine-tenths of the anthracite coal deposits is owned, and more than three-fourths of the entire yearly product is mined, by eight lines of railroad that are substantially in entire union of interests. The report of this Commission summarizes the situation in this paragraph (Vol. XIX, p. 463):

> It can not be long before the anthracite coal business of the United States in all its enormous extent and commercial value will be entirely monopolized by a few powerful financial interests. The only safeguard for the public against exorbitant prices must be found either in the competition of other fuels, in enlightened self-interest on the part of the railroads, or in the immediate application of Government regulation. Competition between either the producers of anthracite coal or the railroads which transport their product can no longer be regarded as of the slightest effect. Any discussion which does not proceed upon this assumption is bound to be futile and misleading. Competition can not be perpetuated.

The testimony of the Industrial Commission on this point has been voluminous. The oldest trusts and monopolies, such as those in coal and oil, had for their foundation railroad discriminations. The Hepburn Committee of New York (State Assembly Document 38, June 22, 1880) stated (p. 48):

> The charge that they (the railroads of the State) discriminate in favor of certain individuals as compared with others in the same locality, is fully proven.

The committee stated (pp. 41, 44):

> The history of this corporation [Standard Oil Company] is a unique illustration of the possible outgrowth of the present system of railroad management in giving preferential rates. * * * The parties whom they have driven to the wall have had ample capital and equal ability in the prosecution of their business in all things save their ability to acquire facilities for transportation.

The next important report was that of the United States Senate Committee on Interstate Commerce, called the Cullom Committee, of 1885–86

(Senate Reports, first session, Forty-ninth Congress, Vols. II–III). It was stated by this committee (Vol. II, p. 189) that—

> The practice prevails so generally that it has come to be understood among business men that the published tariffs are made for the smaller shippers and those unsophisticated enough to pay the established rates; that those who can control the largest amounts of business will be allowed the lowest rates; that those who, even without this advantage, can get on the "inside," through the friendship of the officials or by any other means, can at least secure valuable concessions; and that the most advantageous rates are to be obtained only through personal influence or favoritism, or by persistent "bulldozing."

Such was the summary of the evidence, according to Senators Shelby M. Cullom, Warner Miller, Orville H. Platt, Arthur P. Gorman, and Isham G. Harris.

In consequence of this report the interstate-commerce law was passed in 1887, and in 1888 the Pacific Railway Commission (Fiftieth Congress, 1st session, Senate Executive Document No. 51, Vol. II, p. 184), commonly known as the Pattison Commission, reported:

> The Union Pacific Company has granted to the Standard Oil Company, the Continental Oil Company, and the Consolidated Tank Line Company, since 1880, large sums in rebates, and it has made its entire territory inaccessible to other oil shippers.

It is urged by several representatives of the trusts who have appeared before the Industrial Commission that at the present time they know nothing about these discriminations, and do not receive them, while one combination has gone so far as to produce letters from railroad presidents (Vol. I, pp. 518–526) in support of its assertions. Senators Lee and Emery (Vol. I, p. 287; Vol. I, pp. 634–5) testified that both the president and general freight agent of the Pennsylvania Railroad stated in 1890 that their road had given no discriminations; but immediately thereafter the auditors of the road were subpœnaed, and testified that the discriminations against a single company by their road in one of the years covered by the above denials were over $24,000. They were from 3 to 28 cents a barrel.

A further illustration of the weight to be placed upon the denials of criminal conduct by railroads and shippers appears in the report of the Interstate Commerce Commission for 1898 (12th Annual Report, p. 6) as follows:

> All of the railway witnesses denied knowledge of any violation of the statute, and most of the accounting officers testified to the effect that if the rebates had been paid they would necessarily know about them, and that their accounts did not show any such payments. It was nevertheless fully established by the investigation that secret rate concessions had been generally granted on this traffic, and that the carriers had allowed larger rebates to some of the flour shippers than to others.

On page 18 of this same report for 1898, dated January 11, 1899, the Commission reported that—

> a large portion of the business at the present time is transacted upon illegal rates. * * * These discriminations and preferences are almost always in favor of the

strong and against the weak. There is probably no one thing to-day which does so much to force out the small operator and to build up those trusts and monopolies against which law and public opinion alike beat in vain, as discriminations in freight rates.

Referring to this condition of things in 1898, the report of the Commission for 1899 (Thirteenth Annual Report, dated January 15, 1900) declares:

The Commission believed then and still believes that this statement is not exaggerated.

Testimony taken by the Industrial Commission confirms these statements of the Interstate Commerce Commission, and shows that, despite some improvement in this regard for short periods, discriminations on an enormous scale have continued to the present time. (See Vol. IV, p. 49.)

The receivers of the Baltimore and Ohio Railroad, Messrs. Cowen and Murray, under date of December 22, 1898, wrote the Interstate Commerce Commission as follows:

Within the territory north of the Ohio River and east of the Mississippi the railroad carriers are transporting the larger part of the interstate traffic at rates less than those shown in the published tariffs filed with the Commission, which are by statute the only lawful rates. (Industrial Commission, testimony, Vol. I, p. 637.)

Mr. M. E. Ingalls, president of the Cleveland, Cincinnati, Chicago and St. Louis and of the Chesapeake and Ohio railroads, testified before the Commission October 16, 1899, with regard to discriminations (Vol. IV, p. 297):

I believe your present condition of affairs is building up your large shippers and large institutions and crushing out your small ones; it is so much easier dealing with one man than one hundred. You are crushing out all your small shippers.

The head of another road, Mr. A. B. Stickney, president of the Chicago Great Western Railway Company, on November 20, 1899 (Vol. IV, p. 460), after quoting the assertion of the Interstate Commerce Commission that we want "uniform charges under like conditions, without preference or exception to any person," commented:

Now what we want and what we can get are two different things; * * * It is a beautiful theory that the poor shall buy as cheap as the rich. * * * It is a nice thing that everybody shall be treated exactly alike, but it is not done, and under our present civilization can not be done. * * * It (the interstate commerce law) never has been enforced, and in my opinion, in the nature of things, it never can be enforced.

See also testimony before the Senate Committee on Interstate Commerce of Augustine Gallagher, hearings January 26, 1900, page 21; Dennison B. Smith, page 69; C. B. Cole, page 72; S. H. Cowan, hearings March 23, page 2; Charles A. Prouty, hearings February 20 and April 12; Judson C. Clements, of the Interstate Commerce Commission, hearings for February 20, pages 46 to 53.

Mr. Clements, member of the Interstate Commission, quotes (Hearings before Committee on Interstate Commerce, February, 1900, p. 61) the testimony of Milton H. Smith, president of the Louisville and Nashville Railroad Company, when before the Interstate Commerce Commission. A member of the Commission asked:

Q. You say that the Government ought to leave you and the shipper who resides at those places, free to contract. Now that shipper is obliged to pay you whatever you charge?—A. No.

Q. What could he do?—A. He could walk; he could do as he did before the railroads, as thousands now do who have no railroads.

See also Mr. Prouty, in his testimony before the Industrial Commission, Vol. IV, pp. 147–153; H. T. Newcomb, Vol. IV, p. 103; Martin A. Knapp, p. 142; Judson C. Clements, pp. 154–159.

The only shipper who was frank enough to acknowledge the facts in his own case was Mr. George J. Kindel, a manufacturer at Denver (Vol. IV, p. 254), who said he did not know what others were paying, but—

I know I am not paying the tariff, and I feel that I am a rebater, subject to law, and I dislike that sort of thing. I deprecate it.

Mr. Prouty, of the Interstate Commerce Commission, in his testimony before the United States Senate Committee on Interstate Commerce (Testimony, April 12, 1900, p. 390), testifies as follows:

The trusts and monopolies of this country do not derive their greatest benefits in the way of railroad preferences from the payment of rebates. Take the Standard Oil, for instance: That company claims to enjoy no rebates; yet all New England, by a wrong adjustment of the freight rate, is laid under tribute to that monopoly. The same thing is true of Southwestern territory. On the first of January the difference between carloads and less than carload shipments on petroleum from Cleveland was materially advanced; and the purpose of that was, without doubt, to deliver over the business which the independent refiner had done from Cleveland into the hands of the Standard Oil Company. Take the anthracite coal trust: Various railroad companies own the larger part of the anthracite coal fields, but there are many independent operators. These railways organize coal companies which are owned by the railroads, but which nominally operate the mines as independent agencies. The railways charge by their published tariff a rate of freight which the independent operator says is excessive. The same rate is charged to the coal company and the independent operator; there is no rebate and no discrimination between shippers; but the coal company and the railroad company being the same, what the coal company loses the railroad company gains. Plainly, the only remedy in a case of that kind is to give the independent operator a reasonable rate. The most annoying preferences come in the way of elevator charges, elevator privileges, free storage, car mileage, and things of that kind, which are not rebates, but which are often wrong adjustments of the rate itself.

Mr. Prouty further explained this vitally important matter in his testimony before the Industrial Commission (see testimony, Vol. IV, pp. 149–150). For example, he shows how, on most articles, the rate from Cleveland to New Orleans is but a trifle more than from Chicago,

but on oil it is one-third more, thereby favoring the Standard Oil refiners near Chicago, as compared with the independent companies of Cleveland. The rate on grain products from Cleveland to Boston has fallen 25 per cent since 1887, but on oil it has risen 9 per cent, which seems specially designed to favor the trust, whose big storage tanks in Boston are filled directly by boat from New York and New Jersey. The witness gives further most interesting instances of discriminations to this company by the New York, New Haven and Hartford Railroad.

The evidence shows it is not safe to trust private combinations with the public weal. It may reasonably be apprehended that the more recent combinations will follow the practices of the older trusts. The United States Steel Corporation exceeds all these in that it is a combination of combinations. The stocks of the original corporations were watered when they were organized and again watered when they entered the giant combination. It is estimated by practical men that the actual investment in its plants and transportation equipment does not exceed one-third of its actual capitalization of $1,400,000,000, upon which its profits in the first nine months of its existence were $84,779,298. This corporation has secured not only 80 per cent of the iron ore of the Lake Superior region and practically all the coke of the Connellsville field (Schwab, Vol. XIII, pp. 464, 471), but also the rail and water transportation which brings its raw material together, and upon which its competitors largely depend for their supplies. It is thus putting itself in a position to dictate prices upon material, upon transportation, and upon the finished products. Its board of directors includes a number of men who have had long experience in managing the affairs of the older trusts, and there is every reason to believe, as is shown by its enormous profits on its actual investment, that its policy of unfair competition will be the same as that of those which have preceded it.

In another most important industry, that of meat packing, there are practiced at the present time the same methods as those which have built up the more dangerous monopolies in the past. Testimony just recently given, under date of January 7, 1902, before the Interstate Commerce Commission by traffic officials of leading railroads centering in Chicago shows rebates during the years 1901 and 1902. The following extracts from this testimony are taken from the unpublished stenographer's reports in the office of the Interstate Commerce Commission. Mr. Paul Morton, having general charge of the commercial interests of the Atchison, Topeka and Santa Fe Railway, testified:

> We told one of the largest shippers in Kansas City that if they would come and ship with us we would give them 5 cents reduction from the tariff, and in order to get them we had to promise to do it for a year; I think until the first of July this year, 1902.

Mr. B. B. Mitchell, general traffic manager of the Michigan Central Railway, when testifying in regard to rebates on published rates

of transportion paid to leading packers in Chicago during the latter half of the year 1901, was asked:

Q. How much did you pay out at one time in regard to any one of these transactions?—A. Well, $5,000, approximately.

Being asked concerning one of these firms, "How much would this rebate amount to in the course of a year," he replied, "Perhaps $50,000 or $60,000."

Traffic managers of other railroads testified also to the rebates granted to the packing houses.

These rebates are not limited to the packing industry, as shown by Mr. Morton, of the Atchison road, as follows:

Q. Did you ever make any estimate to see how much it cost your company in any year to deviate from the published rate—how much less you received than you would receive?—A. I should think between half a million and a million dollars a year; nearer a half million than a million.

The witnesses also testified to the secret methods by which these illegal rebates were granted and the evidence destroyed. Mr. Mitchell, of the Michigan Central, being asked whether the entries on his books would show the rebates, answered:

A. We do not have any books.

Q. How do you run a railroad without books?—A. I am referring to the special settlements you refer to.

* * * * * * *

Q. Why do you except that business from the other and transact it without books and then destroy the papers?—A. It was thought to be a wise plan to pursue.

* * * * * * *

Q. Do you destroy these papers in order to destroy the evidence of the transactions to which they relate?—A. It would be an unwise thing from a railroad standpoint to have such matters going about.

Q. Why would it be unwise to disclose the method of procedure?—A. Well, on account of the interstate law.

Q. Because it violates the law, yes; that is what you really mean, is it not?—A. I suppose that is it, sir.

Similar evidence was given by Mr. D. T. McCabe, freight traffic manager of the Pennsylvania lines west of Pittsburg, as follows:

Q. What would be the particular reason for destroying these papers and records?—A. Possibly because we thought you might want them laid before you sometime.

Q. You destroyed the evidence of the illegal transactions?—A. Yes, sir; that is right.

In this investigation it was denied that there had been violations of law by means of underbilling, but Mr. Klinck, in his testimony before the Industrial Commission (Vol. XIII, pp. 274–275), stated that he had personally known cars of meat billed at two-thirds of their weight in cars owned by the packing houses.

In the face of testimony like the foregoing it is not surprising that the people are widely demanding remedial legislation on this subject. Railroad corporations have received from the public hundreds of

millions of dollars for which they have given little consideration. The Government in order to develop the country gave to the railroads enormous tracts of lands which in time became very valuable. They aggregated, according to the Government land-grant office at Washington, about 197,000,000 acres—more than the entire area of New England, New York, Pennsylvania, Ohio, Indiana, and Illinois. In addition, the National Government gave vast subsidies in money or in bonds. The States were also generous in giving to the roads. Cities, towns, and counties also gave enormous assistance, either by direct subsidies, by gifts of bonds, or by subscriptions to stock. Finally the roads received the most important privilege of exercising the right of eminent domain. Many of the roads have gone into the hands of receivers, out of which they have come with these vast debts to the public canceled; yet it has been fully proven that they have made most unjust discriminations in favor of the few at the expense of the many. They even taxed the people for the bounties which they had received from them. If the main provisions of the Cullom bill, which were indorsed by the Interstate Commerce Commission and boards of trade, and demanded in petition by a great body of the people, and which are recommended by this Commission elsewhere (p. 481), are not accepted, then the alternative is Government ownership. If the railroads refuse to accept the conditions of just regulation which legislative authority has an undoubted right to impose, relief should be had from exactions which are now intolerable. The United States Government and the States have both a legal and a moral right to assume ownership by purchase without regard to bounties that have been given and chartered privileges that have been granted. The Government has also the undoubted right to build its own trunk line or lines with branches across the continent and to so reduce rates that the companies will be willing to sell their roads at a reasonable price.

The special committee on transportation to the seaboard appointed by the United States Senate in 1874 in their report (Cong. Rec., 43d Cong., 1st Sess., Vol. II, part 4, p. 3336) declare that Congress has the power in regulating interstate commerce to "appropriate money for the construction of railways or canals" and especially declare that "it may in the exercise of the right of eminent domain take for the public use, paying just compensation therefor, any existing railway or canal owned by private persons or corporations."

Among many court decisions that might be cited is the following:

> Government has not only the power but it is most emphatically their duty and interest to construct railroads when the public interest or convenience demand them. (Bloodgood *v.* Mohawk R. R. Co., 18 Wendell, N. Y., p. 46.)

DESTRUCTIVE COMPETITION.

Next to railway discriminations, the most powerful weapon of the trusts may be designated as "destructive competition." By this is

meant the reduction of prices in places where there is competition while recouping losses by high prices elsewhere. In this way a strong established industry uses its power to crush a rival instead of meeting it fairly and reducing prices everywhere equally. It is often urged that the strongest defense of a protective tariff is that it enables a promising but infant industry to get a start. There is certainly greater need for defending the beginnings of competition from the ruthless attacks of giant combinations in our own country than for similar defense against foreign combinations no greater and thousands of miles more distant. Competition is a struggle, but the whole tendency of civilization is to raise the plane and equalize the conditions of competition.

Mr. A. S. White, president of the National Salt Company, admitted (Vol. XIII, p. 262) that his company met competition by such discriminating prices as are described above. Mr. John Landstreet, president of the United States Tobacco Company, testified (Vol. XIII, p. 336) that the Continental Company had done the same thing. The agent of the Standard Oil Company at Portland, Oreg., wrote March 28, 1894, relative to a rival oil called Sunlight (Vol. I, p. 370):

> You can rest assured that if another carload of Sunlight oil arrives at your place [South Bend, Wash.,] it will be sold very cheap. We do not propose to allow another carload to come into that territory unless it comes and is put on the market at one-half its actual cost. You can convey this idea to the young man who imported the carload of Sunlight oil.

A high official of the Standard Oil Company attempted to explain this (Vol. I, p. 552) by saying that it "was intended to be written in a jocular manner to deny a claim that he was selling an oil inferior in quality." There seems, however, more humor in the explanation than in the letter, especially in view of subsequent testimony of the one who made this explanation to the Commission, and who (Vol. I, p. 569), when asked if his company was not in the habit of putting prices down at least to cost and holding them there longer than a rival could do, replied:

> We are in the habit of fighting vigorously to hold our trade and to advance it.
> Q. To the extent of holding prices down to cost until the rivals give way?—A. Yes.

Mr. George Gunton, who is a strong advocate of trusts, declares:

> It is obvious that if a large concern, no matter in what industry, puts its price in one vicinity at 10 and in another vicinity, where the cost of transportation is substantially the same, at 5, that is not competition, that is not economics, that is not business, that is persecution, and ought to be prohibited. (Vol. XIII, p. 634).

Mr. Monnett quoted (Vol. I, p. 317, table) from sworn testimony taken a year before with reference to the remarkable differences between the price of oil in eighteen places in Michigan and twelve in Ohio to the effect that, where there was competition, the price was often a third lower than in places where there was no competition.

Also reliable data on this subject appear in the investigation (Vol. XIII, pp. 773–911) with respect to the wholesale prices of oil, salt, granulated sugar, and Royal baking powder in several hundred different places in all parts of the country. A few illustrations from this report will show its startling character. Thirty-nine places in California reported the price of oil ranging from $12\frac{5}{10}$ cents to 20 cents per gallon, yet the price in Chicago was only 6 cents and the freight rate from there to San Francisco 5 cents. The rate in Illinois in 88 places varied from 6 cents to 10 cents; 90 places in Ohio reported a minimum of $5\frac{5}{10}$ cents and a maximum in another city of almost equal size of $9\frac{75}{100}$ cents. In Massachusetts, reports from 94 places showed a minimum of $7\frac{5}{10}$ cents and a maximum of $9\frac{75}{100}$ cents. There was a difference of $2\frac{25}{100}$ cents, although the published freight charge even from Buffalo to Worcester was only $1\frac{2}{10}$ cents. One city in Michigan reported the wholesale price at $12\frac{25}{100}$ cents, or more than twice the lowest price of $5\frac{5}{10}$ cents.

The extremes were not so great in the case of granulated sugar or Royal baking powder.

In view of the evils of discriminating prices resulting in destructive competition, I recommend the passage of the bill H. R. 10539. This bill passed the House of Representatives June 2, 1900, with but one dissenting vote, and is designed to make the law which it amends, the Sherman law, more effective. Especially does the amendment in section 9 carry out one of the most important recommendations of the Industrial Commission regarding trusts (p. 650), namely, that which is designed to prevent destructive competition. This is done by providing penalties for "increasing or decreasing the cost of such article of commerce to the user or consumer thereof for the purpose of preventing competition," etc. The bill also provides in section 7 for damages to be awarded to any person or corporation injured by reason of violation of the law, in addition to the criminal prosecution to be undertaken by the Attorney-General of the United States and by the several district attorneys.

The main provisions of this bill should be enacted by Congress and by the various State legislatures. The bill will be found in Appendix VII.

TARIFFS IN THEIR RELATION TO TRUSTS.

In certain cases it is claimed very strongly that trusts have been fostered by an abnormally high protective tariff. There seems to be a great change in public sentiment upon this question within the last few years. Witnesses before the Commission have insisted upon a reduction of the tariff wherever the duties seem to have become unnecessary or too high, and particularly where they tend to foster monopoly. One witness, Mr. Havemeyer, asserts broadly (Vol. I, p.

101) that the tariff is the mother of trusts and that his own, the sugar trust, in particular, is the result of the tariff. The revival of interest in this subject during the last two years has been due to the fact that people now realize the effect of the tariff in strengthening the trusts.

That there is much force in this general feeling can hardly be denied. There are a large number of industries in which it is in evidence that the domestic price is much higher than the export price. I do not agree that the answers to inquiries addressed by the Commission to exporters indicate that the trusts are not chargeable with this practice to any serious extent. Out of 2,000 schedules of inquiries sent out, there were received only 416 replies, and only a very few of these replies came from corporations known popularly as trusts. (Vol. XIII, p. 726.) The fact that about 75 answers indicated lower prices abroad than at home is significant, when it is noted that more than four-fifths of those addressed failed to answer and that naturally those who are chargeable with such discriminations would be the ones who would decline to reply.

Several witnesses before the Commission on behalf of the trusts admitted that their export prices were lower than their domestic prices, but they contended that this was necessary in order to work off their surplus and to keep their establishments running full time, and that all manufacturers in all countries do the same. This argument overlooks the fact that their surplus products could also be worked off by lower prices at home, and that it is the tariff which encourages them to cause a domestic surplus by restricting domestic consumption through high prices. When, as is shown in the testimony regarding several trusts which produce crude products, the industry has reached the point where the labor cost is relatively small, notwithstanding high wages, the tariff becomes not a means of maintaining wages but a means of excessive charges to the consumer and to other American manufacturers who depend upon them for their material. But, on the other hand, where the tariff is necessary to maintain the American rate of wages as against the rates in foreign countries, there is no objection.

I do not agree with the statement in the review of the Commission nor with the statements of trust witnesses that the tariff should be retained in order to protect the small domestic competitors of the trusts. I hold that, apart from freight discriminations, destructive competition, and monopoly of raw material, the competitors of the trusts are able to manufacture and sell their goods profitably at prices as low as those made by the trusts, and that if they are not so able they should not be protected. If the trusts really have economies by which they can sell goods more cheaply, provided at uniform prices, than their smaller competitors, it is not in the interest of the public that the alleged more expensive methods of those competitors should

be encouraged by a tariff. The public is interested in securing cheap products of good quality, whether produced by a large or a small concern. In fact, if an industry is so advanced in this country, compared with its foreign competitors, that the tariff is no longer needed by the trusts, then it is no longer needed by the competitors of the trusts. The real danger to the competitors in such an industry is not in foreign competition but in the destructive competition, freight discriminations, and monopoly of raw material practiced and enjoyed at home by the trust. There must be other reasons than solicitude for their small competitors, which induce the trusts to defend the tariff for their benefit. The small competitor has nothing to fear and nothing to ask in an open field under just laws.

It is admitted that there are several industries where trusts exist which have not yet advanced to the high stage of labor-saving improvements where labor is a small element of cost, and I hold that reductions in the tariff should, on this account, be made conservatively. But there are two important conditions which should determine the selection of industries for reductions: First, those in which labor is a small element of cost; and, second, those in which a trust has gained a monopoly of the raw material in this country, or where it produces partly manufactured material for the use of other manufacturers of more highly finished products. Copper is upon the free list, and when recently the copper trust attempted to hold that product at an exorbitant price, to the great disadvantage of the important growing electrical industries of this country, the imports of copper ore and unmanufactured copper increased nearly 100 per cent in two years, and helped to break down the domestic monopoly. Iron ore is far more important for American manufactures than copper, and the tariff of 40 cents per ton on foreign ore protects the United States Steel Corporation in its monopoly of over 80 per cent of the iron ore of the Lake Superior region, a monopoly whose capitalization, above the prices actually paid for the ore lands, according to the testimony of President Schwab (Vol. XIII, p. 472), accounts for many million dollars in the capitalization of that corporation. President Schwab also concedes (Vol. XIII, p. 456) that in certain lines of the goods manufactured by his combination, such as billets, where labor is not an important part of the cost, we have no need of a tariff. The fact that, though conceding the tariff to be needless, he still objects to its removal, is strong indication that it assists the trust in preserving abnormal prices. Mr. Butler (Vol. XIII, p. 494) asserts that iron and steel of various heavier grades can not be produced in Europe nearly as cheaply as here. Evidently, then, there is no necessity for protection of such a product.

Similar conditions are shown in the testimony to exist in other industries. Mr. Elliott, for example, appeared before the Commission on behalf of the Philadelphia Paint Club (Vol. XIII, p. 210), an

association of dealers in glass and paint, and presented the views of that body to the effect that the development of American commerce in foreign markets would be greatly facilitated by reasonable moderation in the duties upon raw materials.

Mr. Norris, business manager of the New York Times (Vol. XIII, pp. 409–411), testifies that the International Paper Company makes 80 per cent of the annual product and owns 2,000 square miles of woodland in Canada and 1,600 in the United States, including all the spruce timber in the Adirondacks, save what is owned by the State and by a single lumberman at Glens Falls. This company has increased the prices of newspaper nearly 25 per cent, amounting to an additional burden of $4,800,000 per annum on American newspapers, two-thirds of which is clear monopoly gain to the combine. The tariff excludes from our independent paper manufacturers the enormous tracts of forest in Canada, and the only persons who gain are the owners of the limited supplies in this country, while another far more important industry, that of the newspapers, producing a higher grade of product and paying much higher wages and reducing the prices of newspapers enormously in recent years through lively competition, is seriously handicapped.

There is much to be said in favor of accomplishing a reduction of tariff on monopolized raw material through reciprocity treaties. There are, of course, two serious difficulties. First, the "favored-nation" clause, common to most treaties, provides that each nation shall receive as favorable tariffs as all other nations. It is possible, however, that there may be an honorable way found out of this difficulty. Again, another serious difficulty is the fact that the reduction of tariffs by treaties requires a two-thirds vote in the Senate, and also deprives the House of Representatives of any voice whatever on this important question. This method, therefore, gives one-third of the Senators a veto on tariff reductions.

In view of these considerations I recommend, in the interests of labor, the small competitor, and the community at large, that the customs tariffs be at once removed or greatly reduced on all metals in the form of ore or pig, and on iron and steel products as provided in House bill 9056, introduced January 14, 1902; also on minerals generally in the crude state; also on wood pulp and spruce logs, and on other raw materials which are limited in supply and therefore subject to monopoly. In recommending these reductions in the tariff it is believed that the interests of labor will be benefited and the public interest conserved.

LIMITED SUPPLIES OF RAW MATERIAL.

In addition to the removal or reduction of tariffs just mentioned, there should be an increase of taxation by assessing at their true value all monopolized mineral lands. It is safe to say that many of the

trusts to-day are not assessed for 10 per cent of the market value of their securities, while the average farmer and small manufacturer is assessed from 30 to 100 per cent of the value of his property, in different parts of the country. Mr. Schwab testified (Vol. XIII, p. 464):

> We own something like 60,000 acres of Connellsville coal. There is no more Connellsville coal. You could not buy it for $60,000 an acre.

This probably was intended as an exaggeration, by way of emphasizing the great value of this coal field. More accurate was his estimate of the value of the 500,000,000 tons of iron ore in sight in the Northwest owned by this corporation. He said (Vol. XIII, p. 472):

> I should say anyone ought to have a profit of $2 to $2.50 a ton for every ton of ore in the Lake Superior region.

According to this, the ore in sight would be worth $1,000,000,000. Allowing for all exaggerations in these estimates, let the iron ore and coal fields belonging to the United States Steel Corporation pay the same proportion of taxes to their true value as is paid by the farmers of Pennsylvania and Michigan, and it would follow at once that the steel trust could not afford to keep out of the market any more of this coal and iron ore than it was likely to use in a short time. It would be compelled to develop its monopolized resources in order to pay taxes, or else lease or sell to others who would so develop them. Would-be competitors of the trust would therefore have none of the difficulties which they now have through inability to secure their raw material at a competitive price. The mining of coal and iron ore would be placed on a similar level with the growing of wheat and cotton, namely, the cost of production with a fair profit.

CONSUMERS AND PRODUCERS.

In a manufacturing enterprise the main test of advantage or disadvantage to the community is whether the industry has benefited the consumer of the finished product and the producer of the raw material. This benefit consists in reducing the price and raising the quality of the product, and in enlarging the market for the raw material. The testimony shows that the trusts have benefited neither the producer nor the consumer. Upon this the evidence taken by the Commission has been extensive, and the conclusion adverse to the claim of the trusts. The evidence in the case of five of the largest trusts—coal, sugar, whisky, petroleum, tin plate, steel and wire—is summed up in the first volume on trusts (Vol. I, pp. 40 to 57). A number of trust witnesses who appeared before the Industrial Commission have contended, by reference to the example of the Standard Oil Company, that the trusts have cheapened the commodities to the consumer, but in this they have been misled or deceived, as a summary of the testimony shows. It is true that refined oil is selling to-day at less than it was in the early period of the industry; but the trust has not been a factor in this cheapening process. The greatest reduc-

tions in price came before the organization of the trust (Vol. I, pp. 48–52). It did not discover nor introduce the pipe-line system, nor did it discover any new oil fields. It is not shown that it invented any new drilling tools, nor discovered any cheaper methods of refining oil, all of which have been important factors in cheapening oil to the consumer. It has, however, made progress in developing and monopolizing the by-products of oil, which should have cheapened refined oil to the consumer.

Prices have not been lowered as they would have been with free competition, nor as they have been from competition in other commodities. There have been great discoveries and new economies in the production of crude oil, and the benefits thereof account for all the actual reduction in cost of refined oil. This appears from the fact (Vol. I, p. 50) that the margin of profit between crude and refined prices is higher than might have been expected, considering the value of the by-products, which, according to one of the directors of the Standard Oil Company, are equal in value to that of the oil itself (Vol. I, p. 570).

On the other hand, those trusts, like the sugar trust and the Standard Oil trust, which have not been able to monopolize the raw material, owing to its wide diffusion and the large numbers of small producers, have used their power as the sole purchaser to depress the prices. The Standard Oil Company has for years absolutely fixed the price of crude oil. In January, 1895, it announced through its purchasing agent, Mr. Jos. Seep, that it would thereafter fix the price of crude oil instead of following the market quotations, and stated, "the price paid will be as high as the markets of the world will justify." The price that day was fixed at 99 cents per barrel. (Boyle, Vol. I, pp. 436, 446; also Archbold, Vol. I, p. 571.) It has not deviated from this policy from that day to the present time. It fixes the price arbitrarily and frequently lowers it in the face of a declining production. It has not only fixed the price of crude oil at the wells, but also controls through its pipe lines the price of transportation and the price at which it sells refined oil. There has been no change in its methods since it was reorganized under the laws of New Jersey. The producers of petroleum, many of whom have no other business, are compelled to sell their commodity at prices dictated by the Standard.

The dividends from the organization of the trust, according to statements submitted by Mr. Dodd, the attorney of the company (Vol I, p. 799), and the Commercial and Financial Chronicle, have been:

Year.	Per cent.	Year.	Per cent.	Year.	Per cent.	Year.	Per cent.
1882	5¼	1887	10	1892	12.2	1897	33
1883	6	1888	11¼	1893	12	1898	30
1884	6	1889	12	1894	12	1899	33
1885	10¼	1890	12	1895	17	1900	48
1886	10	1891	12	1896	31	1901	48

What its surplus and undivided profits may be it is impossible to determine, but from the evidence taken it is safe to conclude that they are large. The dividend payments of 1894, 1895, and 1896 were 12 per cent, 17 per cent, and 31 per cent, respectively. There was probably no sudden increase of profits commensurate with that increase in dividends. The fair inference is that there were in the years prior to 1895 large profits held undivided.

The capital of the company in 1882 appears to have been $75,000,000. It remained at that figure until 1887. From 1887 to 1891, $90,000,000; from 1892 to 1900, $97,252,000. It can from this be seen that the total cash dividends prior to 1901 were $301,786,000. To this should be added the stock dividend of 1897 of $15,000,000, or a total of $316,786,000, and also the undivided surplus, which, though not published, must necessarily be large. The declared dividends alone are an average of about 18½ per cent a year upon an average capital of $90,000,000, which, however, is an estimated capitalization, not an actual paid-in capital (Dodd, Vol. I, p. 799). The last two years show an actual cash dividend per year of 48 per cent. This is equivalent to a vast mortgage upon the industry if this rate of dividend should continue.

According to testimony submitted to the Commission (Vol. XIII, p. 670), the total production of what is known as Pennsylvania and Lima crude oil, from 1882 to 1900, was 779,746,627 barrels. The Standard Oil Company refined in the five years, 1894 to 1898, 82.3 per cent of the refined product (Archbold, Vol. I, p. 560), which, if this be the average proportion of the crude which they handled for the entire nineteen years, would give them 641,731,379 barrels of crude oil. For this they paid the producers an average of 80 cents per barrel (Vol. XIII, p. 670), or $513,385,379. From this source have come their enormous profits and undivided surplus, the high value of their capital, ranging from $600,000,000 to $800,000,000, and the power which they are gaining over the railroads, the banks, and the industries of the country. These profits and financial power have been secured in addition to the large sums spent in order to maintain their monopoly, through crushing competition, purchasing and dismantling plants and pipe lines, and subsidizing experts to refrain from the business. There are but two sources from which such profits have come—the consumer of the refined product and the producer of the crude product.

The recommendations which follow are not offered in a spirit of hostility to large industrial enterprises, except in so far as they depend for success on discriminations and special privileges. They are offered as a remedy for unjust competition which depends on railroad favors and monopoly of the limited sources of raw material, and which consists in following small competitors from place to place and underselling them at a loss in their limited area in order to destroy their business while recouping by excessive charges in other places. It is essential that it be

understood that the competitors of the trusts ask only a fair field, and that the public and the lawmakers should not be misled by the alleged economies which the trust defenders claim. These recommendations are presented upon the basis of distinguishing between competition which succeeds by introducing new economies and improvements and competition which succeeds by excluding competitors from the markets or from the raw material.

RECOMMENDATIONS AS TO PUBLICITY.

Many intolerable evils arising from the operations of corporations can be cured only when the public have full information concerning all their doings. This is imperatively demanded, and legislation should be enacted, both by Congress, for interstate commerce and under the general welfare clause, and by the several States, providing, for those corporations within their control, a rigid system of public accounting.

While the recommendations of the Commission on this subject are fully indorsed, they should be developed in greater detail in order to make them effective. For this reason the following amplification is submitted to serve as a guide in legislative enactment:

To be efficient a system of public accounting must adopt two separate methods. First, each corporation should be required to make periodical reports of its business, supplemented by other reports upon official demand, all verified by the oaths of certain of its officers. Second, official examiners should also be maintained, who should, at irregular periods and without notice, appear at the offices of each corporation and make rigid examination of its affairs, using its books in the first instance, but verifying the correctness thereof by every practicable method. The reports of this official should be made to a supervising official, and by him duly made public.

Systems of this kind are already in successful operation under the internal-revenue laws and the national-bank acts of the United States. Men who resort to questionable practices in corporation finance are held to a strict line of conduct when they engage in banking or when they manufacture those articles on which the Government levies internal taxes. If the Government protects itself by rigid supervision in such important matters, why should it not protect the people against the wrongdoing of corporations controlling vast industries? The Government grants privileges to corporations and should protect against their abuse. No business whose management is secret is entitled to the privileges of incorporation. The lines of supervision, inspection, and regulation already laid down in the internal-revenue laws and the national-bank act may well furnish models for adoption, whenever practicable, in the inspection of industrial corporations. A system of inspection outlined in the following recommendations will

not only make discriminations and other unlawful methods more difficult and less probable, but will also facilitate other methods of regulation, should they be necessary.

The legislation proposed should embody the following details:

As to reports.—1. Every corporation governed by the act should make annual reports to an officer provided for in the act, who is hereinafter designated as an auditor.

2. The report shall in all cases include—

(*a*) Capital authorized and issued, the amount paid up in cash or otherwise, with a statement of the method of payment, where it is not in cash.

(*b*) Debts, including details as to amount thereof, and the security given therefor, if any.

(*c*) Obligations due from officers should be separately stated.

(*d*) A statement of the method of valuing assets, whether at cost price, by appraisal, or otherwise, and of the allowance made for depreciation.

(*e*) Gross earnings for the period covered by the report, all deductions necessary for interest, taxes, and expenses of all sorts, the surplus available for dividends, and dividends actually declared.

(*f*) The increase in assets since the last statement, with a showing in what way such increase has been secured.

(*g*) The names and addresses of stockholders, with the number of shares held by each at the date of the report.

(*h*) The amount of property taken for stock at any time previously and sold since the date of the last report, with all facts necessary to show the result of the transaction.

(*i*) A statement showing that the corporation in question has not, during the period covered by said report, received any rebates, drawbacks, special rates or other discriminations, advantages or preferences, by money payments or otherwise from any railroad, pipe line, water carrier, or other transportation company. Or if any such have been received or given, stating when, from whom, on what account, and in what manner they were so received, with all other details necessary to a full understanding of the transaction or transactions.

(*j*) The names and addresses of all offices, location of transfer or registry offices, wherever located.

(*k*) A statement that the corporation has not fixed prices or done any other act with a view of restricting trade or driving any competitor out of business.

(*l*) A statement of the proportion of goods going into interstate commerce.

3. The auditor shall prescribe the form of the reports and the matters to be covered thereby, in addition to those stated under No. 2 above. He may, in his discretion, require additional reports at any time when he may see fit on reasonable notice. But his determination shall be prima facie proof that the notice given is reasonable.

4. He may also require supplemental reports whenever, in his judgment, the report rendered is, in any particular or particulars, insufficient, evasive, or ambiguous.

5. In case of assets, small items of personal property included in a plant or organization may be described by the term "sundries" or like general term. The auditor may prescribe rules so as to avoid undue detail in making lists, yet prevent the abuse of this provision.

6. No detail of the business of the corporation shall be considered private so as to be exempt from the examination of the auditor, whenever he may demand report thereon.

7. The auditor shall make public in his reports, which shall be issued annually, all the information contained in the reports so made to him. When a report has been made, and, with all supplemental and additional reports required by the auditor, shall have been approved by him, the corporation making such reports shall publish them in some newspaper or newspapers, after the usual custom in such cases, with the auditor's minute of approval, and shall file with the auditor proof of such publication by the publisher's certificate.

8. If any corporation shall fail to make a report when required, either by the terms of this act or when required by the auditor, as hereinafter provided, said corporation shall be fined not less than dollars for each offense. Every day of failure after a written demand has been made by the auditor shall constitute a separate and distinct offense. In case of failure, also, each of the directors of the said corporation shall be ineligible, for the year succeeding the next annual meeting, to hold either directorship or any other office in the said corporation. But any director shall be exempt from said penalty upon making a showing that he had individually made such report as he was able from the facts at his disposal.

9. If such report is false in any material respect, the corporation shall be fined not less than dollars and not more than dollars, and each false statement in any material matter shall constitute a separate offense.

As to examinations.—1. Expert accountants shall be provided for, to whom shall be paid a salary and necessary expenses. These shall be under the direction of the auditor, and may be sent by him to make examination of any corporation.

2. Any of said examiners presenting his official credentials shall be furnished by the officers of the corporation every facility for complete and full examination, not only of the books, but of all the property, records, or papers of the corporation, which may be necessary, in the judgment of the examiner, for a complete knowledge of the affairs of the concern.

3. Such examinations shall not be at fixed periods, but shall be at such times as the auditor shall fix and without notice.

4. Examiners shall have the power to examine under oath all officers or employees of a corporation, or any other persons having any knowledge of its affairs, and to send for, demand, and inspect books, papers, and any other matter of evidence whatever which is in the possession or control of the said corporation. The act shall provide for a process by attachment in some appropriate court to enforce the authority of the examiner.

5. The auditor shall likewise have all the authority of an examiner in any case wherein he chooses himself to act.

6. No examiner shall be assigned to examine any corporation who is himself interested in the business thereof, or of any competing concern, or who has relatives who are so interested.

7. Any blackmailing or receiving of bribes by any examiner or by the auditor shall be duly punished.

8. It shall be unlawful for an examiner to divulge private business, except by his report to the auditor. But such report, or the substance thereof, shall be open to public inspection.

9. Each examiner shall follow the rules, regulations, and directions which the auditor may, from time to time, lay down or communicate to him as to the method of examination, the form of report, the matters to be covered by the said examination, and all other matters pertaining to his duties.

10. Said examination and reports shall always cover, among others, the following questions:

(*a*) Has the said corporation, during the period covered by the examination and report, received any rebates, drawbacks, special rates, or other discriminations, advantages, or preferences, by money payments or other, from any railroad, pipe line, water carrier, or other transportation company?

(*b*) If there have been such preferences, when were they received, from whom, on what account, and in what manner, giving all details necessary to a full understanding of the transactions?

(*c*) Is the said corporation a member of any combination having or intending to secure a monopoly of any commodity other than such monopolies as are legally granted by patent or otherwise?

(*d*) Has the said corporation any such monopoly, or does it use methods tending and intending to secure such monopoly?

(*e*) Has it made any contracts or agreements tending to secure any such monopoly to itself or any other concern, whether owned by an individual or individuals, a corporation, or some combination of individuals and corporations?

11. Said reports of examiners shall be prima facie true and may be introduced in evidence in all courts to prove the facts therein set forth. Copies certified by the auditor shall be admissible with like effect and under the same circumstances as the original.

12. Reports to be made to
and full authority to be given to enforce by appropriate provisions the foregoing requirements.

TELEGRAPH, TELEPHONE, AND MUNICIPAL MONOPOLIES.

Since the Industrial Commission has not made a thorough investigation of the telegraph, the telephone, and municipal monopolies, beyond examining a few witnesses and summarizing their testimony, the Commission as a body has not presented conclusions or recommendations thereupon. My own conclusions are based upon such testimony as was taken and upon special investigations which I have made. I consider that the views which I have expressed above regarding trusts would not be complete without a survey, even though brief, of these important subjects. The combined capitalization of telegraph, telephone, water, gas, electric light, and street railway companies is nearly $4,000,000,000,[1] whereas the capitalization of the 183 largest industrial combinations of the country, according to the bulletin of the United States census issued in December, 1901, is $3,607,539,200. Many of the industrial combinations are mere aggregations of capital without any special privileges of a monopolistic character except the power to make discriminating prices in order to destroy competition. But the monopolies here described are generally conceded to be natural monopolies, since they depend upon the special privilege of a public franchise.

THE TELEGRAPH.

The United States and Canada are the only important countries that still retain private ownership of this natural adjunct to the post-office. That the industry is a virtual monopoly is everywhere admitted. The testimony before the Industrial Commission has shown that there is no longer any competition in charges between the Western Union Telegraph Company and its relatively small rival, the Postal Telegraph Company,[2] and that one of the most important motives that keeps them apart is the fear that consolidation would be unpopular and would lead to hostile attack.[3] Nearly all other monopolies that are as complete as the telegraph are more or less regulated by Government.

The chief complaint with the telegraph system in private hands, both in England before Government ownership in 1870, and in this country at all times, has been the high charges. In the matter of rates the average receipts reported by the Western Union are misleading.

[1] Computed from the Report of the United States Department of Labor on Water, Gas, and Electric Light, and from the latest annual reviews of the two technical journals, the Street Railway Journal, June, 1901, and the Electrical Review, November 9, 1901.

[2] Chandler, Vol. IX, p. 195.

[3] Chandler, Vol. IX, p. 201.

These were stated for the year 1900 to have been 30.8 cents per message, including address and signature of 10 or 11 words, and counting one figure as one word.[1] The average would be much larger if telegraphing were not mostly confined to the minority of population living in the States from Maine to the District of Columbia, and therefore so near together as to be within the limits of 25 or 30 cent rates.

The great mass of the people of the country west of Buffalo can not communicate with each other or with the East without paying rates that would average not less than 40 cents. From Cleveland to all of the 63 cities of 50,000 population within 700 miles the average of the actual rates for 10 words is 39.6 cents, and the average rate to all the 77 cities above 50,000 population is 45¼ cents. The former Baltimore and Ohio Telegraph Company made a profit on its average charge of only 16¼ cents per message, while its charge from New York to points between Portland, Me., and Washington, D. C., was only 10 cents, to Chicago 15 cents, and St. Louis 20 cents.[2] Rates in Europe are less than half of those charged here at present. In Great Britain the average rate for inland messages is 14.8 cents, including address and signature, and counting five figures as one word.[3]

COST OF CONSTRUCTION.

President Green, of the Western Union, in his annual report for 1891, states that during the preceding ten years the company had constructed 40 per cent of its entire existing system at a total cost which averaged $167.64 per mile of poles, or $33.40 per mile of wire. If these rates of cost be applied to the entire existing system the present cost of construction would be about $32,500,000. Its actual capitalization is $120,364,665.[4] An examination of the reports of the company from 1880 to 1900 shows that in that time about 60 per cent of the present plant has been built at a cost of $22,055,059.77, aside from real estate. Allowing for depreciation on the one hand and real estate on the other, the capitalization of the Western Union is fully three times as great as would be its value were its business subject to the laws of free competition.

The British postal telegraph is conducted on the basis of the American post-office, namely, at an annual deficit, in order to furnish service to the outlying unprofitable sections at the same rates as those paid by populous sections. Extensions also are charged to operating expenses, press messages are forwarded at annual loss by act of Parliament, free delivery extends to 3 miles from the office both day and night, telegraphers' wages are higher than those paid by railway com-

[1] Chandler, Vol. IX, p. 208.
[2] Vol. IX, p. 888.
[3] Report of Postmaster-General, Great Britain, 1901.
[4] Clark, Vol. IX, p. 213.

panies for similar service, old-age pensions and short hours are provided, and the interest charge is two or three times as heavy as it would have been had not the Government paid exorbitant prices in 1870 for the private systems.[1] These extra expenses are greater than the annual deficits, and should be borne in mind by those who criticise the policy of public ownership in great Britain. The telegraph system should be judged like the post-office, not as a money-making investment, but as an essential means of quickening the social life, stimulating industry, and bringing all sections of the country together. These objects can not be fully attained through private ownership.

In the United States only 8 per cent of the telegrams are of a social character, while in Europe the percentage is several times as great. Among the benefits following from Government ownership would be the increased number of telegraph offices in convenient localities, its extension to small villages, its separation from railroads, which now cause delays to private messages through precedence granted railroad business, greater promptness of service, elimination of bribery in the franking system, and uniform rates as low as 20 cents or less.

The claim of the telegraph companies that wages of telegraph operators are much higher in the United States than in Europe is open to criticism. Instead of an average of $60 per month, as stated by the president of the Postal Telegraph Company, the entire amount paid in wages by that company, if divided by the number of employees, would give only an average of $31.50 per month.[2] The United States Post-Office, notwithstanding higher costs of wages and material and longer distances, has the lowest charges of any country in the world, regard being had to the weight carried. There is good reason to believe that a similar result would be obtained with a telegraph system operated by the Post-Office.

The advantages of public ownership are seen in the comparative growth of systems under public and private management. Since 1869, when the British Government took possession of the telegraph, the number of messages in that country has increased thirteenfold and the population has increased 30 per cent, while in the same time in this country the number has increased eightfold and the population has increased 100 per cent. In the past decade the population in England has increased 5 per cent and the number of telegrams 28 per cent, while in the United States the population has increased 21 per cent and the number of messages 26 per cent. The number of messages per capita in each country in 1869 was one-fifth of a message, while now the per capita use in England is twice as great as here. The British telegraph department declares[3] that its growth was checked

[1] Annual reports postmaster-general, Great Britain.

[2] Simple computations from testimony of Mr. Clark, Vol. IX, pp. 194, 200, 202, 205.

[3] Rept., 1894–95.

by telephone competition, but the vice-president of the Western Union explicitly denies such injury here.[1] Contrast this with the growth of the Post-Office Department in the two countries. The number of pieces transported by mail in England increased 82 per cent from the year 1885 to 1901, but in this country the increase during the same period was 182 per cent.

That the telegraph companies are vastly overcapitalized is shown from their own statements. The capital stock of the Western Union amounts to an average of $645 per mile of poles, or $129.80 per mile of wire, while the capitalization of the Postal Telegraph is $782 per mile of poles, or $151 per mile of wire.[2] Upon these amounts dividends of 4 and 5 per cent are paid. On the other hand, in 1893 the Western Union, in a suit in Ohio brought to enjoin the State from assessing its property at about $240 per mile of poles, declared that its lines in Ohio cost but $103.60 per mile, and were worth at that time only $78 per mile of poles.[3]

That the control of the telegraph is closely allied to that of other monopolies is evident from the list of directors of the Western Union, which includes representatives of the leading trusts and railway interests. The monopoly of the Associated Press, whose exclusive "franchises" are worth several million dollars, is based mainly on the special privileges granted to large users of the telegraph. A liberal use of the franking privilege gives the corporation power in legislation. A former president of the Western Union Telegraph said:[4] "The franks issued to Government officials constitute nearly a third of the total complimentary business. * * * Our property is more or less subject to the action of national, State, and municipal authorities, and the judicious use of complimentary franks among them has been the means of saving to the company many times the money value of the free service performed."

The principal danger in a project of public ownership is that our Government, like the British Government, will pay for the water in the stock of the companies. An act of Congress in 1866 permits the Government to buy out the companies at any time at a value fixed by arbitration, but the Government should first build a few of its own leading lines, unless the companies are willing to confine the arbitration to the structural value of their properties plus a reasonable allowance to cover the value of the business as a "going concern."

Wireless telegraphy may be developed for certain purposes, but may not become practicable for the rapid multiplex work required for long distances in this country. This, however, should be considered in connection with any proposition for paying a large price for existing plants.

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[1] Reports Industrial Commission, Vol. IX, p. 223.
[2] Clark, Vol. IX, pp. 213–215.
[3] 61 Fed. Rep., 449.
[4] Vol. IX, p. 191.

A thoroughly up-to-date system, as extensive as that of the Western Union, could be installed in our post-offices for less than one-third the capitalization of that company and with corresponding reduction in charges.

TELEPHONE.

The importance of a cheap and efficient telephone system can hardly be exaggerated. Such a system properly developed should reach every hamlet, almost every farmhouse, and be within easy reach of every workman. The employee would then be able, when out of work, to keep in close touch with employment agencies that would in turn know exactly where labor was needed. The telephone supplements and extends the telegraph and post-office, and if worked in conjunction with these agencies, as in many European countries, it would have greater usefulness than when separately managed. In Switzerland every little commune or hamlet supports out of public funds a communal public telephone station. The number of such call offices and exchanges, to say nothing of private telephones open to public use, was 1,215 in 1897 in that country of less than 4,000,000 population.[1]

The telephone is a natural monopoly. It is both more convenient to the subscriber and cheaper in every way to have a single plant than to have two or more. Competition may be better than tame submission to an exorbitant monopoly in private hands, and when municipalities or national governments are ready to undertake public management it is probable that such an undertaking can be best begun by a competing public plant, as now in some English cities, in order to avoid paying an exorbitant price for an existing private plant, but the ultimate outcome of the telephone business is bound to be consolidation and not competition.

It is natural to expect a larger use of the telephone in the United States, even with our high charges, than in Europe, because of the greater tendency of Americans to adopt every method of annihilating time and distance. Our superiority, however, in the development of the telephone per capita of the population over several countries where public ownership prevails is not as great as in the use of the post-office, where public ownership equally prevails in all countries. Nor is our superiority in the case of the telephone as marked as in the case of farm and other machinery and of labor-saving devices, which in ordinary manufacturing and farming are everywhere in private hands, and are open to free competition.

The American Bell Telephone Company in its annual report for 1900[2] reports 508,262 telephone circuits, or 1 to every 150 of the population. On a single circuit there are often several branch telephones

[1] Testimony of John Garvey, special agent of the English post-office, before a select committee of Parliament on telephones, 1898.

[2] Reports, Industrial Commission, Vol. IX, p. 820.

in a building, where there is usually but one in other countries; consequently the company reported 800,880 stations or telephones, and there may be 200,000 others in the hands of individual companies, which would make a total of 1 to every 76 of the population.

The report of the New Zealand post-office, telegraph, and telephone department, 1900–1901, reveals 8,210 telephones, or 1 to every 93 of the population. Switzerland, with 3,300,000 population, has 38,864 telephones,[1] or 1 for every 88 of the population. Norway has 29,446 telephones, or 1 in 73 of the population, and Sweden 73,500, or 1 in 69.[2]

The testimony before the Industrial Commission[3] has brought out the relative use of the telephone in six cities of over a million population, to wit: Greater New York, Philadelphia, and London, with private ownership, and Berlin, Paris, and Vienna under public management. In Greater New York the average is only 20 per thousand of the population, even including all the branch telephones on a single circuit. In Philadelphia the number is 16, and in London 7, while in Berlin there are 25 telephones per thousand, in Paris 13, and in Vienna 8. Where the two systems of public and private management have come into sharp collision in Europe, public management has usually been more progressive and successful.

In Amsterdam the private company during its first ten years of undisturbed existence, 1882–1893, increased its subscribers only from 612 to 1,551, or 153 per cent, while during the first four years of municipal management the city has increased the number of users from 1,796, January 1, 1897, to 4,462 in 1901, or 148 per cent. Moreover, the municipal plant is not only paying interest on its bonds and $20,000 to the city treasury, but in 1898, the last year for which returns are at hand, it paid $15,897.94 for the redemption of its bonds and $18,668.67 for extensions.[4]

The island of Guernsey, with only 35,000 population, started a municipal plant in 1898 with 350 subscribers, which has now increased to 800, while the neighboring island of Jersey, with 20,000 more population, was paying a private plant twice the rates charged by the public plant in Guernsey, and had only 88 subscribers in 1898.[5] The testimony taken by the Commission has been insufficient to determine the charges for telephones in this country, save in New York City, but that they are much higher than abroad is admitted by the repre-

[1] Bethell, Vol. IX, p. 789.

[2] Hall, Vol. IX, pp. 820–823.

[3] Vol. IX, pp. 884–885.

[4] Testimony of Mr. Bethell, Vol. IX, p. 793–4, and a semiofficial account of the plant in Municipal Affairs, New York, March, 1900.

[5] Testimony of Mr. A. R. Bennett, electric engineer for Guernsey, to select Parliamentary committee on telephones in 1898, and in the Municipal Journal, London, in 1901.

sentatives of the Bell Telephone Company. They even admit that the long-distance rates hardly average one-third as much abroad as here.[1]

The English post-office department has just brought near to completion a telephone system for London, and has announced charges for using it, which may well be compared to those in New York. A person can henceforth send 600 messages a year on a party line in London for $22, as contrasted with $60 in New York, and can secure a single line and unlimited service for only $83 in London, as compared with $240 in New York. Yet even these rates, although only one-third of the rates in New York, were considered so high as to draw out recently a protest from a meeting of delegates called to consider this question and presided over by the lord mayor.

While admitting the lower rates in Europe, the representatives of the telephone companies claim[2] that wages in New York for telephone operators are about $8 to $12 per week and only $2 to $6 per week in most of Europe, being $4 in Switzerland, while the wages of linemen in New York are from $12 to $21 a week, i. e., from $52 to $90 a month, and in Europe are $4.50 to $6 a week.[3] According to testimony, however, taken in the court of appeals of the District of Columbia in 1900,[4] the wages of telephone operators in Washington are only $6 a week and in Toronto $5, while the monthly wages of linemen are $50 and $43, respectively.

Wages in Washington and Toronto are far more typical of the average than are wages in New York. These are scarcely one-half of those given for New York and from 50 to 100 per cent higher than those reported by a hostile critic for Europe. In view of the fact that with high wages the American post-office charges less than any other, it can hardly be contended that the differences in wages justify the large excess of telephone charges here over those in other countries.

New Zealand was able in 1900 to earn above operating expenses 7.14 per cent on the investment of the government, which was $105 per telephone. Yet the average receipts per telephone in that country of high wages and short hours were only $29.80.[5] Switzerland has a small deficit on her State telephone system, balanced by a small profit on her telegraph, and may well consider the deficit justified, since in return therefor, and because of Government ownership, anyone anywhere in Switzerland can secure a phone for $20 the first year, $14 the second, and $8 every year thereafter, plus the charge of 1 cent for every message sent within the local district, 6 cents for three-minute

[1] Bethell, Vol. IX, p. 802.
[2] Mr. Bethell, Vol. IX, pp. 783–784.
[3] Ibid., pp. 784, 790.
[4] Case of J. T. Manning & Co. *v.* The Chesapeake and Bell Telephone Company.
[5] Report, 1900–1901, of New Zealand Post-Office Telegraph and Telephone.

talks to other districts within 31 miles, 10 cents within 62 miles, and 15 cents for all longer distances.[1]

A British parliamentary committee in 1898, after hearing a large amount of evidence from the best experts in England, reported in favor of (1) public ownership and operation either by the post-office or by municipalities and preferably by the former, and (2) that the existing private company should not be bought out at a monopoly price. As a result of this investigation and of the dissatisfaction with the private company which has a monopoly of all telephoning in England, Glasgow opened a new telephone system of its own in April, 1901, with 4,800 subscribers. The district of 143 square miles included several suburban villages. The old company was charging $50 for unlimited service. The city, with nearly a million of inhabitants in the telephone area, has reduced the charge to about $26, while any who wish can secure a telephone for $17 a year and pay 2 cents, or the price of a postage stamp, for each time they call up other subscribers.

Tunbridge Wells, in July, 1901, followed Glasgow's example for a district of about 70,000 population and an area of 229 square miles, including 48 political subdivisions. The cost of construction has been but little over $100 per telephone, and the number of subscribers is rapidly growing. Portsmouth is at work upon a similar competing plant, and several other English cities are seriously agitating this problem. The private company is unable to meet this competition in the typical American way of abnormally low prices in some places while charging high prices elsewhere, because of a provision in the contracts which many large cities have made with the company when they gave it the right of way to occupy the streets. The contract provided that the city should get the benefit of any reductions made to certain other cities of corresponding size; hence the National Telephone Company can not reduce the price in one city to meet municipal competition without a corresponding reduction in many other places.

It is evident that the tendency is everywhere toward the municipalization or nationalization of the telephone. England and America are to-day the only great exceptions among the advanced nations. The English Government already owns the trunk lines, and is likely, in cooperation with municipalities, to take over the rest of the plant on the expiration of the existing franchises of the private company in 1911. In America the telegraph problem will probably be solved before the Government takes hold of the telephone, and there may always be room for national control of the long-distance systems and ownership by municipalities of the local lines, but in one form or another the public ownership and operation of this natural monopoly and necessity of modern life will ere long be recognized as wise and just.

[1] Testimony of Mr. Gavey before select committee of Parliament on telephones, 1898.

MUNICIPAL MONOPOLIES.

Water, gas, electric-light, and street-railway plants have an existing capitalization to-day of over $3,630,000,000, or more than that of all industrial combinations reported upon by the Twelfth Census. Twenty-five street railway companies alone report to the Street Railway Journal gross receipts in 1900 of $125,000,000, of which nearly one-half was profit. A single street railway, the Metropolitan, of New York, has outstanding securities of a par value of $158,000,000 and a market value of over $200,000,000, while the Consolidated Gas Company, of New York, has outstanding in its own securities, and in the securities of gas and electric-light companies owned by it in the neighborhood of New York, over $140,000,000.[1] The capitalization of each one of these two companies is only exceeded by one trust, the United States Steel, and their market value by only that of the Standard Oil Company.

A huge monopoly of $116,000,000 in securities of lighting plants and street railways has just been organized in and about Pittsburg. A still larger combination, the so-called Everett-Moore Syndicate, is developing 1,600 miles of street railways from Cleveland, Ohio, to northern Michigan. The United Gas and Improvement Company not only operates the gas works of Philadelphia, but owns and operates similar plants in Jersey City, Kansas City, Des Moines, Atlanta, and forty other places. Almost equally large are the lighting and street-railway interests of Chicago and of eastern Massachusetts. A noticeable fact is the extent to which the directors of the largest trusts are also the owners of the stocks of these cities' monopolies as well as of the telephone and railroads.

Regulation has been tried with some success in the State of Massachusetts, with the result that the 1,973 miles of track, with an average of 4.5 cars per mile, are capitalized at only $42,242 per mile, while the 18,469 miles of such track in the rest of the country, with an average of only 2.9 cars per mile, are capitalized at $100,150 per mile.[2] The Massachusetts Gas and Electric Light Commission has kept down the capitalization of the lighting plants, outside of Boston, but the people of Massachusetts have shown that they were not altogether satisfied with the results accomplished and are now operating in 17 cities electric-lighting plants, and in three places gas works for both public and private consumers, and the movement in that direction is steadily growing. The commission has not been as successful in reducing prices as in checking capitalization. The public are, after all, more interested in the former than in the latter. The United States Supreme Court has lately decided three important cases which will greatly increase the power of State legislatures and city councils to reduce

[1] Annual review, Street Railway Journal, June, 1901, and Electrical Review, November, 1901.

[2] Computations based upon reports in Street Railway Journal for June, 1901.

exorbitant charges of municipal monopolies.[1] Although the cases refer only to water companies, they relate equally, of course, to any other monopolies similarly situated. In the Rogers Park water case, decided March 25, 1901, the court said:

2. An ordinance granting an exclusive franchise to a water company, with the right to use streets, requiring the municipality to pay certain rentals, and binding the grantee, among other things, to furnish an adequate supply of water, does not give a contract right to charge the rates named in the ordinance for the whole period of the franchise by virtue of a provision that the grantee "shall charge the following annual rate to consumers of water during the existence of this franchise," as this is merely a regulation of the right to charge rates, and does not amount to a stipulation that no other regulation will be made during the term of the franchise.

In the Freeport case, decided at the same time, the court held:

3. The power of a municipal corporation to grant exclusive privileges must be conferred by explicit terms. If conferred from other powers, it is not enough that the power is convenient to other powers, it must be indispensable to them.

4. A contract giving a water company the right to charge certain rates for thirty years without interference by new ordinances changing rates is not authorized in Illinois, act April 9, 1872, empowering cities and villages to contract with such companies for a supply of water for public use for a period not exceeding thirty years, and Illinois, act April 10, 1872, empowering such municipalities to authorize persons and private corporations to construct and maintain waterworks "at such rates as may be fixed by ordinance and for a period not exceeding thirty years," since, under the rule requiring strict construction of such grants, the clause "for a period not exceeding thirty years" qualifies the words "construct and maintain," but does not qualify the words "at such rates as may be fixed by ordinance."

While public regulation can be carried very far under these decisions and under the precedents established in Massachusetts, there are likely to result such demoralizing relations between these uniformly powerful franchise holders and public bodies seeking to regulate them as to increase rather than diminish the growing tendency toward municipal ownership and operation.

In 1897 the United States Department of Labor found that 53.7 per cent of the water companies, embracing nearly 80 per cent of the invested capital, were publicly owned and operated. In electric light the public plants were only 15.2 and 8.7 per cent, respectively, while in gas only 1.5 per cent of the companies and less than 1 per cent of the invested capital were in the hands of municipal bodies. Even of the electric-light companies that are in public hands the great majority, including all the larger plants, are as yet unable to secure from State legislatures the opportunity to sell to private consumers, and consequently are not able to show as great economies as would otherwise appear.

The most improved and largest of the important plants is that of Chicago, which was started in 1887 and now supplies about 4,500

[1] Rogers Park Water Co. *v.* John B. Fergus. Freeport Water Co. *v.* City of Freeport. Danville Water Co. *v.* City of Danville.

street arc lights. It is the largest municipal light plant in the world, and, despite severe handicaps for a long time through poor management and the spoils system, it has during the last five years been so well managed as to have nearly paid for itself and for all the interest on the cost of the plant out of the difference between its operating expenses and what it would have had to pay to private companies for the same amount of light. This is on the basis of the price per light which the city has continued to pay private companies for lighting a large number of streets which until lately the city plant could not reach.[1]

The Detroit plant supplies over 2,000 arc lights at one-third less cost per year, including even interest, depreciation, and allowance for the taxes that a private company would pay, than the city could secure by contract for a period of ten years with a private company at the time the plant was built. Allegheny, Pa., with over 1,400 arc lights, supplies light at a cost, including interest, depreciation, etc., nearly one-fourth less than that which Pittsburg, directly across the river, has been able to secure from a private company during the last ten years.[2]

Mr. A. D. Adams, electric engineer, gives the Commission[3] the results of a most interesting study of municipal management of electric-light plants in Massachusetts, where the data of both the public and private plants can be largely relied upon. He found that if the municipal plants are credited for the same value for the light furnished for both streets and public buildings as is charged for the same amount of light by the private plants of the same size in the State, it would appear that the public electric-light plants, besides charging private consumers a little less than these private plants are doing, are earning 12.2 per cent a year upon the investment, while the private plants, properly to be compared because of the same size, are earning only 6.4 per cent. Part of the difference can be accounted for by the taxes and the possibly greater allowance for depreciation of the private plants. The rest of the larger profit of the municipal undertakings must be due, as Mr. Adams suggests, to their "more efficient and careful management."

In Europe municipal operation is rapidly increasing. All the boroughs of Scotland and 184 of the 205 of England own their waterworks. Half of the gas sold in Great Britain outside of London is supplied by public bodies, and London would soon have public management of both gas and water if the London county council could obtain the consent of Parliament.

Municipalities own over 55 per cent of all the street-railway track of the Kingdom, and yearly operate an increasing percentage of the track owned.

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[1] Official report of the manager of the plant, Mr. E. B. Ellicott, 1901.

[2] Reports John Hunter, engineer Allegheny plant.

[3] Reports Industrial Commission, Vol. IX, pp. 275–285.

From 1895 to 1899, the last year for which the facts are at hand, the supply of electrical energy by private companies for light and power increased from 20,566,128 units, known technically as kilowatt hours, to 56,883,927, or 176 per cent, while the supply by municipal plants rose from 9,637,638 units to 68,232,688, or 608 per cent.[1]

The private companies charged 30 per cent more than the public plants and made 5.45 per cent on their investment. The publicly owned companies made 4.9 per cent, but would have made 8.2 per cent had they sold the same amount of energy at the higher prices charged by the private companies. The municipalities, because of somewhat larger plants or greater progressiveness, or apparently for both reasons, produce electrical energy cheaper than their rivals. The net profits, after paying as large depreciation charges and taxes as the private companies, make from 4.2 per cent to 7.5 per cent on the outstanding capital of water, gas, electric lights, and street railways.[2] Hence indebtedness contracted for such profitable undertakings does not disturb the British taxpayer.

Municipal superiority is manifest even in the gas business where private companies enjoying perpetual franchises can not claim, as do the street railway and electric-lighting companies, that they are handicapped by the short duration of their grants.[3]

At the desire of private-owned monopolies and kindred interests a "Parliamentary committee on municipal trading," in 1900, heard all that could be said against municipal ownership. It was so little, after all, and the success of municipal undertakings was so convincingly put by several city officials, that the committee, after printing the valuable evidence which they had taken, adjourned without making any report, and their suggestion that they be continued by the present Parliament has gone unheeded.

CONCLUSION.

American railroads, whose monopoly character is daily becoming more apparent, are stocked and bonded for about $11,500,000,000, and had net earnings from operation after paying taxes, 1900–1901, of $507,966,710. This means that these securities are to-day worth in the market over $10,000,000,000. If we add to this the $4,000,000,000 of water, gas, electric-light, street-railway, and telephone securities, probably worth that much in the market, and the $3,000,000,000 of securities of our largest so-called trusts, to say nothing of the telegraph, there looms up a valuation of industries more or less monopolistic in character of $17,000,000,000, or probably one-fifth of what the present census will find to be the estimated true value of all property in this

[1] Manual of Electric Undertakings for 1900–1901, by Garcke, a recognized authority.
[2] Reports of Local Government Board.
[3] Municipal Affairs, September, 1900, article by M. R. Maltbie.

country. When this is contrasted with the insignificant factor played by monopoly values in the census reports prior to 1860, the problem before the country can be partly realized.

As a preparation for meeting the issues involved, a forward movement should be at once made toward better control, and, as fast as practicable, public ownership and operation of these city monopolies should obtain. In such a movement, the importance of the merit system for all employees and of a larger interest in civic problems by all citizens can not be too strongly emphasized.

THOS. W. PHILLIPS.

OPINION BY MR. F. J. STIMSON,

Advisory Counsel to the Commission,

REGARDING LEGISLATION AS TO INDUSTRIAL COMBINATIONS.

WASHINGTON, D. C., *September 5, 1901.*

The Industrial Commission being in session, Mr. F. J. Stimson appeared as advisory counsel of the Commission, and discussed the subject of industrial combinations as follows:

My purpose is to treat the subject of trusts and combinations solely from the point of view of the law and the Constitution of the United States, with the necessary consequences that a lawyer may fairly advise will be likely to result from any line of action adopted either by Congress or by the States in regulating these combinations.

As a basis for what I have to say, I wish to lay before the Commission a brief *summary of the objections against trusts*—i. e., large combinations of capital which are for any reason obnoxious to public policy—*and of proposed remedies.*

OBJECTIONS AGAINST TRUSTS.

I. That large aggregations of capital are inherently objectionable and against the public interest, because—

(1) Destructive of individual initiative;

(2) Their power a menace to the public politically.

Objectionable in practice because—

(*a*) They tend to become a monopoly, raising the price of their product to the public or diminishing the output;

(*b*) They destroy private enterprise by direct control or intentionally unfair competition, such as the local cutting of rates below cost to destroy local rivals.

REMEDIES.

II. All suggestions for remedy so far made by anybody—witnesses before the Industrial Commission, Chicago trust conferences, and the essays and discussion of individuals—divide themselves into only three possible courses of action—

1. Stricter antitrust legislation by the States and by Congress without altering the present relation between their respective jurisdictions—the present system, but improved.

2. To have Congress release to the States its interstate-commerce jurisdiction, so far as to allow the States themselves to regulate manufacturing or trading corporations engaged in interstate commerce—the State-control system.

3. Conversely, to have the National Government take to itself a larger and perhaps exclusive control of all such corporations, regulating by act of Congress all such as do any business across State lines—the system of Federal control.

The first, or present system, is claimed by some to be inadequate both by reason of the hopelessness of getting all the States to regulate their corporations in the manner desired, and by the practical inability of the States themselves to control the corporations other States create when operating in other States or Territories. The Industrial Commission, however, in their preliminary report did not go beyond suggesting definite improved laws, State or National.

The second method raises the question whether Congress can delegate to the States full control over corporations engaged in interstate commerce. States have already the power to prohibit corporations of other States from carrying on any business within their limits. Can Congress now relinquish to them the power of regulating or controlling such corporations generally? This would commit the control of all domestic and foreign corporations in any State to the legislature of that State.

The third method is to have the United States act directly, by limiting the right of any corporations to engage to any extent in interstate commerce, which corporations are for any reason obnoxious to the national standard, whatever it be. This line of action could be enforced in various ways: Either by direct prohibition to State corporations to engage in interstate commerce, or by taxing them heavily, or by denying them standing in the Federal courts, or the use of the mails, etc. Finally, it has been suggested that Congress might create Federal corporations who should alone be authorized to engage in interstate affairs, or at least should prescribe a standard of organization, publicity, stockholders' and officers' liability, etc., to which the State corporations shall conform. Such a law might be merely permissive—i. e., it might authorize national corporations without destroying the State corporations of the same nature.

TEN SUGGESTIONS FOR LEGISLATION.

In all the mass of literature on the subject, these are the only three courses directly pointed out. Stated concretely, they sound more interesting, but still comprise only ten different suggestions for legislation:

(1) That foreign corporations should be forbidden to do business by the States;

(2) That monopolistic combinations, even if the aggregation of capital is made into a single corporation, should be prohibited or annulled by State law.

(3) Making destructive competition—i. e., discrimination, or cutting rates in one locality for the purpose of destroying a local competitor—either criminal or penal, and giving the person injured damages; this both by State and Federal legislation.

(4) General publicity of the documents of organization, the stock books and the annual reports of operations, and balance sheet of assets and liabilities. This, also, perhaps, to be by both State and Federal law.

(5) The creation of Federal corporations to do any kind of interstate commerce, in whole or in part, to whose standard State corporations doing such business must or may conform, if, indeed, they are not prohibited by the act of Congress proposed.

(6) As related to this the national regulation of all corporations doing any interstate business, by a national bureau of industry, reports for taxation purposes, or other machinery.

(7) The strengthening of the Interstate Commerce Commission, and perhaps of the antitrust laws.

(8) The relinquishment to the States by Congress of the power of legislation as to corporations or combinations conducting interstate commerce business other than as agencies of transportation.

(9) The lowering of the tariff, especially in industries affected by trusts.

(10) The denial by Congress to any State corporation, shown to be obnoxious, of the right to do interstate business, with its various agencies, of the right to the use of the mails, of the right to sue in the Federal courts, coupled with heavy franchise taxation by the Federal Government, graded, if necessary.

I shall say nothing about objections to trusts and combinations, although that is a subject which meets the Commission on the threshold, whether the objections to them as shown in the evidence before the Commission are of sufficient importance, as weighed against the benefits which result from them, to make it wise for the Com-

mission to recommend any action on the part of the States, even, or still more on the part of Congress. I shall assume for the purpose of this talk that there are objections, or may be objections, to great trusts or combinations, for which, if possible, the Commission would like to recommend a remedy, so that we can pass at once to this subject of possible remedies.

PRESENT SYSTEM OF REGULATION, IMPROVED.

All the remedies which have been suggested by anybody—either by witnesses, by experts, by law advisers, or by members of the Commission itself—fall into only three possible categories. The first of those categories, for speedy mention, I will define as the method of the present system—that is, leaving the States free to legislate so far as they constitutionally can, and not taking any new action on the part of the Federal Government, except in so far as the path has been opened by the interstate-commerce law and by the Sherman Act. These acts, of course, might be or might not be improved or extended, but no substantially new principle would be involved. That I call the present system; that is, leaving these trusts, which are, of course, all corporations, and now all State corporations—that is, corporations created by individual States or Territories—leaving their control to the States in so far as the corporations are concerned and to the Federal Government only in so far as their actions result in interstate commerce, and that only in the direction blocked out already in the two acts of Congress I have referred to.

SYSTEM OF COMPLETE STATE CONTROL.

The second system, which is quite a new one—I think the suggestion originated before this Commission—may well be called the system of complete State control; that is, the somewhat novel proposition that the Federal Government shall relegate or relinquish to the sovereign States full control over large combinations or corporations, trading or otherwise, in so far as their actions result in interstate commerce. In other words, that the Federal Government take its hand off the constitutional provision which puts the regulation of interstate commerce in its sole control, and hand the matter over, at least for the present, to the States, with full power, and not partial power, to regulate. They now, the Commission is aware, have partial power only in that they may not exclude a foreign corporation organized for interstate commerce, and that term *foreign* I shall always use as meaning the corporation of another State of this Union or another Territory of this Union. Assuming that that power is not taken away by Congress, there is no question that any State of this Union can withdraw absolutely the power from any ordinary corporation of any other State to do, to-day, any kind of business within its limits. In other words, it can take away its charter, as the recognition of that charter in the foreign State only depends upon what is called the doctrine of internal comity.

The only method by which the States can now control these corporations is by complete exclusion from doing business at all within the State. The moment they let them in at all they can not amend their charters; nor can they in any way restrict the way they do their business or the kind of business they do, if only it be "interstate" business. It has been suggested that there might be Federal legislation—which should take the hands of the Federal Government off interstate business, that now being the objection to mere regulation and not exclusion—that Congress could hand over, as it were, this whole matter to the States, with full powers, so that the States could regulate the business of such combinations or corporations of other States, even when it is interstate business. That is the second possibility, and that I call complete State control. I say complete State control and not State control merely, because the States now have a certain control. That is, they can exclude a corpora-

tion as a corporation; but this would be more than that; it would give them all the power Congress now has to regulate their business in any way, even when it is interstate business.

SYSTEM OF FEDERAL CONTROL.

Leaving that second plan, we now come to the third. That is the one I propose to take up first. This is an equally novel proposition, which, I think, originated before this Commission; that in order to meet the evil, real or imaginary, of these trusts or combinations, that is, of these great corporations now created by the States, the Federal Government, under the interstate power of the Constitution, should take under its control all corporations which were organized for the purpose of engaging in interstate-commerce business or are in fact doing such business. I am going to take up that, which I call the system of national control or Federal control. First, for this reason, that it is distinctly the most radical and revolutionary of the three courses, and also by far the most effective. In other words, if it be constitutional, and if Congress should deem it also expedient and wise, such an act of Congress would be a far more drastic and complete remedy, obviously, than the other two. Therefore, if the Commission were, at the end of its debate on this subject, satisfied both as to the constitutional power and the expediency of such a recommendation, it would in a sense dispose of the other two, which are both halfway measures. Therefore it seems to me wise to take up this plan first.

I am going, first, to speak of the constitutionality of such an act of Congress, of the way it might be drawn to make it constitutional, so that it would be constitutional on its face, and only at the end, perhaps, say a few words as to the legal consequences, which are in a sense obvious and actual consequences, which I am bound to foresee. I shall not presume to give my opinion of the consequences of such an important public policy, but I do suppose it would be proper for me to point out such of the obvious results as any lawyer would know were certain. Now, as to the constitutionality of such an act of Congress. It rests, of course, on that clause of the Constitution which gives Congress power to regulate interstate commerce, or, as in terms it says, commerce between the States and foreign nations. That latter part is a separate clause of the paragraph of the Constitution and I will leave it out, because I do not suppose there is as yet any serious apprehension that any foreign corporation will come in as a trust or a powerful corporation in this country. We will merely take that clause which imposes the full power to regulate interstate commerce upon Congress. That phrase has been interpreted in a great many ways, and one of the great results that we have got from our hundred years' work of the Supreme Court on that clause of the Constitution is that it is clearly shown that that constitutional power does cover the instrumentalities of commerce. The Supreme Court of the United States has held that this clause of the Constitution covers the instrumentalities of commerce as well as the commerce itself. The decisions on that point so far go mainly, if not solely, to what you might call the tangible instrumentalities; that is, the railroads and the steamboats, and the bills of lading and documents sometimes. But I think that phrase will be held, when the time comes, to cover as well the instrumentalities which do the business, if it be unquestionably interstate. That is, it will be held to cover the artificial being which does the business, at least in so far as its ordinary functions are concerned. On the other hand, it is equally clear that the Supreme Court has held in many quite recent decisions that manufacturing *per se* is not interstate commerce, no matter how completely the goods manufactured do in fact become, or even are intended to become, the subject of interstate commerce. Just to cite two cases to show how strong they are on that point, there was one case where a raft of lumber in the State, I think, of Maine, which was intended, every log of it, to be shipped into other States of the Union, and had, in fact, already been

sold, was held against the objections of the company itself, which claimed that it was now interstate commerce, not to be so. The Supreme Court held the lumber not to be a subject of interstate commerce, and sustained the right of the State of Maine to put a tax on the lumber, although it was going to other States, and had in fact already been sold. The other case is a liquor case in Iowa, where, under a prohibition law of the State, a company manufactured distilled liquors, exclusively for export, because they could not be consumed in Iowa, which liquors were in fact exported, and intended from the beginning to be exported into other States; the court held nevertheless that this was not interstate commerce. Those two cases show how dangerous it is to go far upon the other side. While on the one hand I am inclined to advise that Congress has power to regulate or control corporations, and their organization, and their functions, which are engaged solely, certainly, in interstate commerce, and possibly also corporations which are to a considerable extent engaged in interstate commerce, on the ground that they become instrumentalities of such commerce, yet I think that any definition would go too far, for instance, which should state that a corporation is to be considered such an interstate instrumentality because it manufactures goods which are merely intended mainly, or possibly even wholly, to be sold in other States. Such a definition would not be sustained by the courts. So I do think that it would be constitutional for Congress to express itself as to these great combinations. That is, I think it would be constitutional for them to pass an act regulating the creation and the operation and the taxation by the National Government of corporations which are indubitably in interstate commerce. That answers the first question, namely, that this third method perhaps is within the Federal powers.

Mr. PHILLIPS. Would it be competent for Congress to require corporations that are now doing interstate-commerce business to be chartered under the Government?

Mr. STIMSON. Stated in so many words, yes; but it would be very dangerous for Congress to attempt to define. It would have to leave it to the courts, I think, although I am coming to that in a moment.

Mr. JENKS. You said that you thought if a corporation simply manufactured goods with the intention that they be sold in other States that would not be interstate commerce. Would it, in your judgment, be held interstate commerce if they themselves actually sold their goods into other States?

Mr. STIMSON. That transaction would undoubtedly be interstate commerce if done as a habit and a custom; but it would be very difficult to define, for the reason that we do not know what we are going to do with our goods. And also, although this is again a little out of order, I am reminded of another line of decisions. It has been held that the sale of a single article, although everybody knew and the judges knew perfectly well that it was only one of a hundred thousand such sales, was, nevertheless, not interstate commerce. It has been held that the sale by an Ohio corporation of a reaping machine in Colorado is not interstate commerce, on the ground that it is one act—that they are not engaged permanently in the business. In the same way it has been claimed, as we all know, that a foreign corporation may foreclose a mortgage. Even a real-estate mortgage corporation, even one of those companies where investing all over the United States must have been the bulk of its business, nevertheless it has been held against State laws that such a corporation could foreclose a mortgage, although the State where the land lay tried to exclude it. So that it takes a very strong state of facts, as the Supreme Court now stands, to make them find that an actual doing of business, once at least, or even several times, makes the corporation doing such business "interstate."

Mr. JENKS. Perhaps I may give another example along the same line. We know that many of these larger industrial combinations would prefer to be considered Federal corporations instead of State corporations. Now, suppose one—like, for example, the sugar combination—if a bill of this kind were passed, were to organize

under the Federal law on the ground that it was regularly engaged in interstate commerce, as it was selling its goods through the United States, and it was entitled to be considered an interstate-commerce corporation; in your judgment would it be so considered if it itself made that plea?

Mr. STIMSON. That question I am coming to later; I think it would.

ANY DEFINITION OF INTERSTATE COMMERCE DANGEROUS.

On the one hand, you have a doctrine that the instrumentalities of the commerce may be regulated; so I advise that Congress may regulate the creation and operation and taxation of those corporations, which we will assume are in fact interstate-commerce corporations. On the other hand, it will be very dangerous for Congress to define them by any such phrase as "manufacturing goods which are in fact sold in different States." In fact, any definition will be very dangerous. The Commission will easily see that if a general act is passed by Congress, an act in general terms for the organization of interstate-commerce corporations, and a corporation has organized under it, and goes ahead for a few years under it, and can prove that it is an interstate-commerce corporation, then, in view of that fact, the courts are very unlikely to say that that is not an interstate-commerce corporation which has in fact been chartered as such and acting as such for many years; so that that comes to the same conclusion. That is where we were a moment ago when you asked your question. After trying for two or three months to make definitions of interstate commerce, after collecting all the definitions I could find made by the Supreme Court and by the circuit courts of this country, I finally, contrary to my first impression, dropped the whole business. In other words, if Congress should desire to enact such a law, or you should recommend it, I do not think it would be wise for Congress to attempt to define what interstate commerce is. I think that, in fact, as we have just said, if such a law were passed, and corporations were to organize under it and act for many years—because it would be several years, of course—and if everybody knew it, and it was a matter which the Supreme Court would almost take judicial cognizance of, that these corporations were almost entirely doing interstate business, the court would so hold. Take the case of a corporation, for instance, that mines coal in a State where it sells no coal, if such a thing is possible—and it is possible—but all necessarily goes outside of the State. It is organized under articles which state that it is organized for doing interstate commerce, and it has in fact been going on for years, and the corporation wants it to be so held and will furnish evidence that it is doing it. I do not think there is much danger that the Supreme Court will hold that the act of Congress does not apply to such a corporation; whereas if you attempt to define you are met at once by the decisions that I have quoted; you are met at once by a decision the Supreme Court has given that manufacture is not interstate commerce, and all those rocks lie in the way. In the second place, if you define, you meet a very great objection to begin with, because both Congress, when the law is being debated as a bill, and afterwards the courts, will be met on the threshold with a statement of what is interstate commerce, which they may demur to. You put the objection right in front, instead of waiting to see whether you reach it or not, and you lose the elasticity of the Supreme Court itself, which, as we know, is very ready to apply what we call the "implied powers" of the Constitution in such a way as to further what seems to it to be the necessary course of events and business of this country. They will define for you far better than you can yourself. And, finally, any definition narrows the scope of the bill. The moment you say "a corporation to do thus and so," the lawyer on the other side, when the case comes up, will argue that because you say that, you do not mean the other thing; if you say transportation, you do not mean manufacture; if you say manufacture, he will say that this has been decided already not to be interstate commerce.

DEFINITIONS OF "INTERSTATE COMMERCE" IN SUPREME COURT DECISIONS.

So I came to the conclusion, which I submit, that it is a mistake to try to define an interstate commerce corporation. I took, on the contrary, the two or three definitions which we find in reported decisions of the Supreme Court, words so large as to cover anything that ought to be covered by the phrase "interstate commerce," and put those definitions in terms into the first section of the bill I should suggest a draft of—I am not talking now of the advisability of such a bill. For instance, The United States *v.* The E. C. Knight Company, known as the sugar trust case, which held, you will remember, that manufacture of sugar is not interstate commerce, and said what they thought was: "Contracts to buy, sell, or exchange goods to be transported among the several States; the transportation and its instrumentalities, and articles bought, sold, or exchanged for the purpose of such transit among the States, or put in the way of transit, may be regulated." Now, you will observe in two points of that decision they sustain the position that I am now taking—firstly, to buy, sell, or exchange goods to be transported among the several States is interstate commerce, and necessarily every case that comes up will involve such a contract; secondly, they say, "transportation and its instrumentalities," and under that, of course, we can argue that the man, or still more the artificial body of the corporation, which does the interstate-commerce business, is an instrumentality of it as much as anything in the world can be. Then in Robbins *v.* The Shelby Taxing District they held that the negotiation of sales of goods which are in another State, for the purpose of introducing them into the State in which the negotiation is made, is interstate commerce, but the manufacture or production of those goods is not.

Mr. GARDNER. Have the courts gone so far in the use of language in these decisions as to establish it as absolutely safe to use the phrase "interstate commerce," as we habitually do, instead of what the Constitution says—"commerce among the States?"

Mr. STIMSON. I should think so. If we use "commerce among the States," we almost invite the objection that the company is not always doing it. The abstract phrase "interstate commerce" seems to me to mean the course and function of the whole business rather than the mass of actual transactions.

Mr. GARDNER. It can not mean anything more than the Constitution means.

Mr. STIMSON. No; but I think the Supreme Court has got in the habit of using that phrase as meaning that rather than an aggregate of individual instances. You see there is a logical distinction between the two things.

Then in the case of Hopkins *v.* The United States "Definitions as to what constitutes interstate commerce are not easily given so that they shall clearly define the full meaning of the term. We know from the cases decided in this court that it is a term of very large significance. It comprehends, as it is said, intercourse for the purposes of trade in any and all its forms, including transportation, purchase, sale, and exchange of commodities between the citizens of different States, and the power to regulate it embraces all the instruments by which such commerce may be conducted." Now, that is perhaps the most full or the longest of all definitions, but, nevertheless, I think the gentlemen will see how absurd it would be to introduce that into an act. What you want to do is to say "commerce among the States," or "interstate commerce," and then when a case comes up the lawyer defending the act of Congress will cite that sentence as the definition of what interstate commerce is; and you will observe that there they use the phrase "interstate commerce" and not "commerce among the States." I will read from some other cases. There are two more before the last one I wish to read. In the case of The Cherokee Nation *v.* The Kansas Railway Company the Supreme Court said: "The means designated in the act, although not indispensably necessary to accomplish the end in view, are appropriate and conducive to that end, and therefore within the power of the courts to

adopt." Now, if the Supreme Court feels, as I think it probably will, that the immense bulk of interstate commerce of this country is in fact being done by large corporations, I think, when it comes to that point, that, the phrase coming in an act of Congress, it will hold in these same words that the means designated in the act—perhaps although not indispensably necessary—are conducive to the end, and therefore within the power of Congress to adopt. In the case of The United States *v.* Williams, which is about 15 years old, this is said: "The power to regulate commerce may be used for the promotion of other objects of national concern." Now, that is a very important dictum of the Supreme Court, because that goes to the length of saying that we may use this bureau to regulate commerce, although our motive may be not only to regulate interstate commerce, so as to prevent or control such large corporations or trusts, and that is the complete answer to our doubts. Finally, the last case I will cite—the case of The Addystone Company *v.* The United States, the steel pipe case. They made the last and the most concise, and therefore I think the best, definition, and the one I would suggest that you adopt: "Interstate commerce consists of intercourse and traffic between the citizens or inhabitants of different States, and includes not only the transportation of persons and property, and the navigation of public waters for that purpose, but also the purchase, sale, and exchange of commodities." Now, observe what word brings in that enlargement. It is not "intercourse;" it is not the phrase "intercourse between the citizens or inhabitants of the different States," because that, as every English grammarian knows, means primarily merely the people themselves traveling to and fro. At most it means them and their personal effects, and the writing of letters, and that kind of thing; and they in a sense show that they mean only that by "intercourse," because where in the last part of the same sentence they are defining these two words they say the first "includes not only the transportation of persons and property, but the navigation of public waters for that purpose." That is what they mean by *intercourse;* but they add a word, and the word here is found for the first time—"interstate commerce consists of intercourse and *traffic.*" Now, that is the word that the Supreme Court has adopted as the final general large word for the modern view of interstate commerce—the word *traffic;* and they define it, as you will see, in the last sentence, "but also the purchase, sale, and exchange of commodities." Now, as we know, the court has held many times that a contract is a commodity. The word "commodity" is also very broad.

That phrase, "purchase, sale, and exchange of commodities," is what they really define to be their meaning of the word "traffic." They make that word the key word, and I think that if you will adopt it you will see that the proposed act would then mean to go to the length of covering everything and all things that the Supreme Court has held or will hold to be "commerce among the States."

Mr. CLARKE. If a contract for the purchase of goods made may be interstate commerce under that decision, would not a contract ordering the same goods to be manufactured be in the nature of interstate commerce?

Mr. STIMSON. Undoubtedly, if you could show that the contract was made in a different State; but I need not point out how easily it could be evaded by simply dating the contract in the same State.

Mr. CLARKE. Then does not that come very near to holding that under the interstate-commerce power manufacturing is a part of interstate commerce?

Mr. STIMSON. I should hardly say so. Firstly, we have these definite decisions I have already quoted that it is not. Secondly, manufacturing is not a contract to buy goods where they are manufactured. I think the words of this case go very far, and that is why I stated it last; and it is on that decision principally that I rely for this whole doctrine.

There is only one other reason why I want to stick to this general term, and that is that I should be very much afraid of the question that might be raised by the

people who are opposing this law, or by a company that did not wish to come under the law, if the law were ever made mandatory (which I am not going to suggest, however), namely, that being engaged in interstate commerce in part, or as a result, or as an instance, does not make a corporation an interstate-commerce corporation. That argument will be used for all it is worth, and it is also another reason why we avoid definition. If we should attempt to say that a corporation which manufactures or which makes contracts for goods manufactured in other States than where it is chartered is an interstate corporation or company, the objectors to our law—for instance, a corporation chartered to make chairs in Massachusetts—would say that because they sell those chairs or even make contracts to manufacture and deliver those chairs in other States sometimes, or even very often, it is not, therefore, an interstate corporation. So I wish again to leave to the court to go just as far as they will on that point without attempting to define, and thereby running the risk of objection to the bill and to its constitutionality if enacted.

APPLICATION OF THE PROPOSED LAW.

The crucial section of the act of Congress that I will suggest as the possible one, as a constitutional one, is, of course, the necessary first section, which defines what Congress is going to do, and in a sense determines whether the whole thing be constitutional or not. Afterwards you will put in all the regulations that the Commission may see fit to recommend for such a Federal law; but this first section must clearly define what Congress is going to do, to whom the law applies. And this first section here is the result of a great deal of boiling down and a great deal of leaving out, and is now very brief; but I think it would be constitutional. I will read it.

"Any State corporation engaged in interstate commerce"—I wish to get both legs to stand on; I say, not only, a corporation organized for the purpose of, but one which actually is, because one might be upheld by the court and the other fail—"Any State corporation engaged in interstate commerce," and there I had put in "in whole or in part," and after much debate upon that with myself I left it out, because, it seems, to use that phrase "in whole or in part," if it would be used by the Supreme Court in interpreting this act of Congress, would be unnecessary; and if it would not be read in by the court, is unconstitutional. Now, although I do not want to double arguments on this point, that is a very important one upon the question why we should not attempt to define too closely. Congress has no power to make definitions of what is interstate commerce. That is a point of law. That power rests only with the Supreme Court. Therefore, if Congress attempts to define, one of two things must happen; either the definition will be unnecessary—in other words, either the law will define a thing which the court will in fact find is interstate commerce when the case arises, in which case definition is unnecessary and not wise, because, as I have said, all definitions narrow—or the definition itself will be unconstitutional. No amount of piling up of statements, at the beginning of this act of Congress, of the kind of corporation that you mean to include, will amount to anything at all, except as showing the intention of Congress. I had at one time put in "in whole or in part." I now have "either by transportation or by other traffic or commerce." I think it is wise to go so far, because you may wish to make it perfectly clear that the intention of this act is not merely to cover instrumentalities of transportation, railways, ferries, telegraph, or express companies, and so on, or bills of lading, but that it tries or means and intends to go further and cover trade or what the Court has defined as "traffic," and then do as I have shown was done in this last case I quoted, make the word "traffic" what we call an *artificial* word; that is, as every lawyer will bear me out, a word which means a great deal more in the law than it means in ordinary English grammar. That is the law's definition of the "artificial" phrase. An example, for instance: Many States in the West have statutes which say that the word "grant" in a deed implies a great many contracts and warranties. A simple use of the word

"grant" legally embraces all that; and so the word "grant" becomes an artificial word. So I hold that this decision of the Addystone Pipe case and others that lead up to it have made that word that I speak of, *traffic*, an "artificial" word, and a word of the broadest comprehension; and that is the word I should wish very much to go into the first section of this bill. Now, I will read the thing in the whole. I have only read one sentence so far.

"Any State corporation engaged in interstate commerce, or any number of citizens of the United States desirous of forming a corporation for the purpose of engaging in interstate commerce, either by the transportation of persons or property, or by other traffic or commerce among the States, may be organized as a Federal corporation under this act, and as such may sue or be impleaded in the Federal courts, and such corporation shall not be subject to taxation under the laws of any State except as to property actually situated within such State."

A PERMISSIVE STATUTE PREFERABLE.

The last part of this proposed first section leads to the next recommendation I shall certainly make the Commission. That is, even if this be done at all, it does not seem to me wise, and I have no doubt the Commission already think so, to make this a *mandatory* statute; that is, to provide that any corporations or persons doing this business *must* organize under the Federal statute. Such a law would be, in the first place, altogether impossible of any practical acceptance, I think now, at the hands of the people in their present temper; it is doubtful if it would go through Congress; and it is really too sudden; it is too radical. On the other hand, if you make this a permissive statute, it becomes at once, in a sense, experimental; you neutralize an immense amount of opposition. Those corporations only will come in which most undoubtedly belong to the class intended, and which, from the very fact that they came in voluntarily, will be desirous of making the law a success and will work fairly under the statute proposed.

FEDERAL AND STATE TAXATION.

Mr. GARDNER. Suppose the Pennsylvania Railroad, now includiug the Philadelphia, Wilmington and Baltimore and the Pennsylvania Railroad proper, and the branch of the old Camden and Amboy, should come in under that act to form a national corporation under your provision. They could not be taxed except for the property located in the State. What would become of the franchise tax on which we are running our public schools?

Mr. STIMSON. I put in that word taxation rather by way of suggesting the point I am coming to next, namely, of the inducement that we want to offer to all in order that somebody may organize under this law; but it is quite possible that should be thought of a little more carefully. Of course it is possible that the franchise tax which, at least in my State [Massachusetts], is regarded as a tax on stock, might be amended so as to be a tax on property.

Mr. GARDNER. In our State [New Jersey] we add together the value of stock and debt, and the difference between that sum and the amount of tangible property found is reckoned as franchise.

Mr. STIMSON. We have practically the same law in Massachusetts. We take the market value of all stock. We do not include the debt because we——

Mr. GARDNER. There is the point. If you add the debt to the value of the stock, and then assess everything you can find a value for, the difference between the two becomes the franchise tax. It is held that the only way to get the value of a farm, for instance, is the amount of the mortgage and the amount it is worth.

Mr. STIMSON. Our law is substantially the same as that one; take the value of the stock and from that deduct the value of the tangible property.

Mr. GARDNER. Now, you have entirely left out the debt. You have lost all the property that is represented by the debt.

Mr. STIMSON. I am not quite sure; I may be wrong on that statement. I am not quite clear that the Massachusetts doctrine is not a little more logical. In other words, suppose a corporation worth $1,000,000 in stock had $1,000,000 worth of debt, and the stock was now worth $1,000,000. Suppose that debt were to be wiped out to-morrow. It would be worth $2,000,000. Now, that money would have to come from somewhere. In other words, is not the market value of the stock determined by consideration of the amount of debt outstanding against the company?

Mr. GARDNER. It is; and, therefore, under your system you are deducting the debt and you are not assessing for the whole value of the property. If the market value of the stock be a million dollars it is subject to the indebtedness the same as a mortgage——

Mr. STIMSON. I would say as to that that I would rather not debate that principle; the recommendations that I make may well be altered somewhat, and if we think that as now drawn they would exclude franchise taxation, it is very easy to put in a word to cure it.

RIGHT OF A STATE TO TAX A FEDERAL FRANCHISE.

There are things that we have got to look out for on both sides. The old case of McCulloch against Maryland—the first Federal bank case, away back under Marshall—held that the States had no power to tax any Federal corporation, on the ground that the power to tax is the power to destroy. If you wish double taxation it is a thing that is constitutional to do. However, as it is an excise tax, you must understand if you modify that phrase so as to leave also the possibility of franchise taxation to the State, you will be having double taxation, which will of course heavily handicap these corporations. Under the modern theory of taxation a State has only the right to tax tangible property within its borders. Take the American Telephone Company—it is largely dependent on property outside of Massachusetts. From a national point of view the State of Massachusetts has no right to tax that property; so that if you take that horn of the dilemma and keep the whole system of franchise taxation, necessarily the Government must have power to tax these things also. Part of the very advantage of this scheme is the Government regulation we anticipate, from the reports that will be required in order to have the national tax assessed. So I am quite clear that these corporations must and should be taxed by the Federal Government also. If you contemplate a double franchise taxation you will find it harder to get corporations organized under this act of Congress. Even as the section is now drawn, you allow the State to tax all tangible property. The State has no further right to tax anything, for it is a Federal corporation. If you give the State that power you will destroy the practical result of your bill, and in the second place be doing in a sense a kind of injustice. The general theory is against double taxation. Indeed, I am by no means certain that the Supreme Court would not upset the whole thing and say you have no power to give the State the right to tax a Federal franchise.

The object of putting in these two or three things at the end of that first section is that they are advantageous to the proposed corporations. If your act is permissive, obviously you must offer some advantage to people to organize in this way, because they will naturally be somewhat shy. They will know that they are subject to national taxation, which State corporations now practically are not, and they would distinctly hesitate, I think, before organizing as a Federal corporation unless, to put it plainly, you make it worth their while. Now, the two obvious and constitutional ways of making it worth their while—I might say necessary ways—are these two mentioned here, namely, that they will be released from any control of a State, and from any taxation, except on such property as such a corporation actually chooses to put in any such State; and that they will have the right in all cases to go to the Federal courts.

Those two advantages I believe are very great, indeed, and I believe that only those two advantages put into this act (and undoubtedly the Commission might suggest many other advantages) as a bait offered, will be quite sufficient to get a great many of the large corporations to come in under this act.

Mr. LITCHMAN. Do you think there is any chance of getting legislation from Congress that is going to take away an income that amounts in some States to millions of dollars?

Mr. STIMSON. I should think, yes; that is a practical question; I am not a politician. I think that if there is a very strong feeling against trusts, it is quite possible that the feeling is strong enough to make the States relinquish such franchise taxation as they now get from those corporations which do an interstate business. Of course, we must remember this does not apply to all. Many of the States—most of them—don't tax franchises very heavily. I am very familiar with the laws of a great many States that hardly tax them at all. It is only as a rule in the Eastern and older States that we have developed a very heavy or complex system of excise tax.

Mr. GARDNER. Is it not heavy in Illinois?

Mr. STIMSON. Yes; Illinois and Massachusetts and New Jersey, but many of the States do not get any.

TRANSPORTATION AND MANUFACTURE COMBINED.

Mr. CLARKE. Suppose an interstate railroad like the Pennsylvania acquires mining properties and manufacturing properties and carries on those kinds of business, whether under its name of the Pennsylvania Railroad Company or under the names of manufacturing companies, but as a matter of fact engagse in interstate commerce and makes contracts for the production and delivery of goods at a price which is lumped, embracing the cost of production, with its profit, and the cost of transportation, with its profit. Does not that so far involve manufacturing that under the interstate-commerce powers of the Constitution a charter might be granted which would permit the doing of all that business, and which would involve the power which regulates a contract or every branch of it?

Mr. STIMSON. I should think so. Of course in that connection I would point out that this law should be made as simple as possible in the first instance. Assuming that we want to be as simple as possible, if we get the public favor, it would very readily be amended, especially this first section, to cover other cases. I have not thought it wise to complicate the thing at all, because there are objections enough to the law, stated in the most harmless form it could be put in. It might be very possible a mandatory act of Congress would be wanted to say that a corporation which is primarily a railroad, and which in fact does also a manufacturing, mining, or other business, should be considered to come under this section, or something of that sort; but generally, as we all know, in radical legislation it is wise to get the door open at first before you broaden the proposition.

APPLICATION TO RAILROADS OPTIONAL.

If you do not want this bill to apply to railroads, you can say so; it is entirely constitutional to do so. You can limit it to those interstate-commerce corporations which are engaged only in trading commodities, or to anything else you choose. I think, however, that the States will be able to get just as much tax as they do now as the bill is now drawn, and especially so far as railroads are concerned. From other companies, which, however, mostly do not do an interstate business, such as State banking companies or mortgage companies, they might not be able to; but as it will be quite impossible for the Federal courts to prevent the State taxation upon property unless it comes to the point of confiscation, I have no apprehension on that

score. At the same time if this bill were to be finally recommended and you were to say we do not wish it to apply to railroads, it might be done.

I am of the legal opinion that this section of the bill, as drawn, would apply to all corporations which in fact have agencies to sell and exchange in more than one State, and which do, and are willing to say they do, an interstate traffic business. Whether we are wise in going after the trusts in this way I am coming to later, but most unquestionably this bill does go after trusts. Railroads primarily are interstate trade corporations. Unless you make an expressed exception, this bill will include railroads; but I was not thinking of railroads at all when I considered it. I see no objection to the phrase that they be allowed to sue and be sued in the Federal courts. It would probably be law anyhow, and the only object in stating it in the bill, as I said, is as a kind of bait to the large combinations to organize under this law.

As to the other point—that of taxation—I am inclined to think, in the first place, that it is necessary in order to bring them in. I do not believe that the mere right to sue and be sued would be enough; and, in the second place, I doubt very much whether, if Federal corporations are organized under this bill, you will find the Supreme Court of the United States sustaining heavy tax laws upon the franchises; that is, upon the corporate existence of those corporations. Loss of State taxation is undoubtedly one of the practical objections to this one of the three lines of action.

FEDERAL INCORPORATION AND CONTROL.

If, therefore, these inducements are sufficient, as I think they are, to get these great combinations to come in under the law, and if, as I believe, the courts would hold that when they said that they were organized and were doing an interstate business, and when in fact they manufactured and sold and exchanged in more than one State and made contracts in more than one State, the law would apply and hold to these corporations, you would at once have the national bureau of reports and of taxation, which, as it collected the taxes, would require all the reports which were needed about these companies. Every kind of information would be given that Congress chose to say it wanted; any kind of regulation could be put on, without any exception, that Congress chose to put on. Even the fourteenth amendment would not apply, because these corporations, being created by Congress, could be destroyed by Congress.

Mr. LORIMER. Would it be possible to so regulate those corporations as to prevent them from underselling in certain localities in order to drive out competition?

Mr. STIMSON. Certainly; anything imaginable. There is not anything Congress might not do. You would then go on, subject only to the danger of driving them to relinquish their Federal charters, and impose any restrictions you chose. By the way, it will be important to put a section in this bill—the usual section—that Congress shall at any time have power to revise and modify the charter. Congress would have the full regulation of them. It would be an object lesson. The country would get used to the act. We should hope that most of the large corporations now created by the States, which in fact do an interstate business, would choose to come under this law and take out a Federal charter. Finally, after experience and success with the legislation, it would be a fair subject of consideration then for Congress to make the law mandatory. In other words, if it had created a means by which corporations could well and satisfactorily do this immense business in the country that is now done by these large corporations, and many of the combinations that came in and stayed in showed that they could do so, and it went along all right, it would then be practical politics and reasonable, and would not arouse opposition at that time, for Congress to pass another law providing that no State corporation should in the future do an interstate-commerce business, but that all such business should be conducted by these Federal corporations. That, I am

quite sure, is the way to get at it. As a lawyer in New York who is largely engaged in these matters expressed it to me, the thing to do is to "toll them in" first. When you have got them in and have got them organized under the Federal law, regulated and improved so that you will not drive them out, and the thing goes on until you have a recognized successful system, then, if you will, you may require that all this interstate-commerce business shall be conducted by Federal corporations, if by corporations at all.

I think that such a law would be constitutional. I think that in so far as I have now gone in the statement it would work; that is, that a permissive law of this sort would work with the bureau to be established, which should be the organism, in the first place, to grant charters, and, in the second place, to direct the operation of them, and, in the third place, to tax such corporations.

Mr. GARDNER. Is there not something illogical in that? We have gone after all sorts of trusts on the ground that they do so many bad things that the public good requires that they be rounded up and their powers curtailed. We then assume that if we just give them an opportunity under a national bill the managers of these corporations are all so good that they will come in and say, "Regulate us; prevent us from doing these bad things; make us real good boys right off."

Mr. STIMSON. That point I was going to cover in my closing remarks on this theme—as to the objections and results of such a law; but one thing that I have said might well be recalled. Yes; these corporations should in the first instance be induced to come in under the Federal law. In the second place, they should be regulated, possibly, more and more strictly under that Federal law. But in the third place I also added that when the thing had got so that it worked and proved to be all right as a working organism, and the public were content with that kind of Federal corporation and its regulation, then we could slam the door; then we could stop them from going back to organize the State corporations at any moment by simply saying that no State shall in the future charter corporations of this sort. I don't propose, in other words, by any means, that the course of events shall be so as to make it always better for these great corporations to be under this proposed statute. They are now under existing State statutes, strict or lax. I think this a matter of such complexity that we must not be limited by what we do in the first instance. It would be debated by all people interested, by people of learning and authority, and very much debated, of course, in Congress. I am convinced that the public mind would understand ultimately, though it might not at first.

On the other hand, the only alternative is to make the law mandatory, and that I am convinced would not go. I doubt even if the Supreme Court, in its present temper, would sustain a mandatory statute which took away from a State the power to charter corporations; and I am very certain it is not a matter which would be regarded at all seriously on the floor of Congress. I think that the public temper, even in what we have heard said in this room, shows that. It is very wise when you are going from one system to another to leave the old bridge to stand while you are building a new one. We now have some Federal and State corporations existing at the same time. There is nothing illogical and nothing that is not highly expedient in having these Federal corporations given life by Congress and regulated until we thoroughly see that we can do all we wish by Federal legislation before the door is closed upon the present power of the State. But now for the other side.

It seems to me that I ought to point out what doubtless members of the Commission individually have foreseen would be the results, the necessary legal consequences, of such a drastic alteration in our legislation as any such measure as this would be. As Mr. Gardner has just stated, in order to make the legislation not a cover and a nest for objectionable trusts and corporations, it must necessarily be stricter than the laws at least of *all* the States now are on corporations. In other words, it must be better; it really ought to be better than the best State—than the State law which is

best on the subject of combinations of this sort. It certainly ought to be very much better than the worst State. If it be only better than the worst State—this Federal control—the really weak corporations will of course continue to organize under the law, let us say, of Arizona or Porto Rico. Therefore your whole scheme is of no ultimate value against the evil doer until you, as I expressed it, slam the door. That means until you take away from the States the power to create any corporations which do an interstate business. If the Supreme Court should hold that this law means doing interstate business in part and not in the whole, that decision will also vest Congress with the power of taking away from the States the power to create any corporation, almost, to do business at all. For few corporations in these times exist that do not do at least some interstate-commerce business. Furthermore, consider the proportion of the business of the whole country that is now done by corporations as against the proportion which is now done by individuals and partnerships. I can speak with no expert authority on that point, but from my observation of my own State and of New York, the two States where I practice law, I should be very much surprised if the bulk of business was not now done by corporations. I should be very much surprised if much more than the bulk of the productive, the manufacturing kind, of business was not done by corporations; and also, I think, nearly all the transportation, telephone, and express business is done by corporations. Take manufacturing; in my country, at least, a mill that for 50 years was run by a father and son is now run by a company. I think an immense percentage of the manufacturing business is now done by corporations. I think, too, the transportation is wholly done by corporations, and I even think that a good deal of the merely trading or mercantile business is done by corporations.

Mr. GARDNER. In the last analysis of the thing, would it not be true that almost all of the business of the States now is practically of an interstate-commerce character? Suppose, for instance, a company was organized to make saws in Burlington and sell in the State of New York, and perhaps in Pennsylvania, or if they bought their steel somewhere else, and in turn bought billets from the mines of Pennsylvania; the complexity of our business, with the purchase of raw material from one place and the manufacture in another, puts us in such a position that there is almost no commerce entirely free from the element of interstate commerce.

Mr. STIMSON. I think Mr. Gardner's statement amplifies a line of thought that I am now on. I agree very much with what he said. Of course, it is possible our Supreme Court under this act might say that interstate commerce meant what a company did with its own business, and not in the fact that it bought its material in one State and sold it where it might choose to. They might conceivably draw the line there—they might say that the mere fact that the company made saws in Burlington and bought iron in Pennsylvania did not make it an interstate company.

Recourse in all instances would be given to the Federal courts. I think it therefore important to point out that any such measure as this would be the most radical and the most revolutionary—I do not use the word in a bad sense necessarily—legislation ever passed in this country, with the exception of that which was the result of the civil war. The notion of "State rights," what remains of it, would be riddled. Ninety per cent of the business of the people would be taken from the control of their own States and their own courts and put under the control of the Federal Government. For in regulating these Federal corporations Congress would control not only their relations with sellers and buyers, with their creditors and stockholders, but with the labor they employed national eight hour laws would become possible without constitutional amendment.

JURISDICTION OF FEDERAL AND STATE COURTS.

You would undoubtedly put power enough in the Federal Government to control trusts. There would be no danger about that, provided they wished to exert it; but

in handing that power over you would take, it really seems to me, more than half of the present local self-government powers of the States, under the regulation by Congress on the one hand, and, furthermore, under the regulation by the Federal courts as against those of the State. For, after all, what are the rights of the people? They are defined in the Declaration of Independence in three or four different terms—life, liberty, the pursuit of happiness, and the right of property. Life you would not take away; liberty you would not take away; but very largely you would take away property rights from State control and put them in the hands of the Government at Washington. In so far as the pursuit of happiness depends upon property in corporate form, you would hand that over to the Federal Government also.

Mr. CLARKE. You mean personal property?

Mr. STIMSON. More particularly; but even real estate would be dragged in, so far as it became the property of a corporation. All corporations rent and own real estate. The value of real estate in any locality depends on the corporations. Substantially all property rights would ultimately be dragged into the Federal courts and under the legislation of Congress. That seems to me to be the legal result. I have talked with many lawyers and I am bound to say they state it quite as strongly as I do.

I suppose this is merely a twice-told tale. I am sure the members of the Commission have thought it out. But I did not think I should close this branch of one of the three remedies without pointing out these necessary legal consequences. Centralization, so far as property is concerned, will obtain to a degree never dreamed of at any previous time. It may be it is wise. It may be that these corporations are so big as to have got beyond State lines. It may be wise not to allow any artificial creatures for doing business to be created by the States. It would practically end in forbidding artificial creatures except those called into being by the National Government. I am not saying that in the course of 100 years that may not turn out a wise thing, but I do think I ought to call attention to the immensity of it.

Mr. PHILLIPS. In regard to the judicial system. Would it not require the expansion of the Federal courts?

Mr. STIMSON. They would have to be expanded enormously. In our State the lawyers dislike the Federal courts. Every lawyer in Massachusetts will stay so long as he possibly can in the State courts, because the State courts have always been better. They are much more speedy, and they have usually as good judges and better juries. In the West I have found in my own experience that the contrary is true. I know of States where if your case is a sound one you go into the Federal in preference to the State courts; but that is not the case in New England. You would have to more than double the number of Federal judges if this legislation is to be effective.

If you look through the dockets of the courts to-day—the important cases that come into the equity courts—I do not believe there is more than one case in ten where neither party to the case is a corporation. Of course I am not talking about the personal injury cases and that sort of thing, which are usually the cases that are now brought in our common-law courts, though these are usually brought against corporations for damages to persons or property. The important causes with us are the equity cases. Those are the cases which concern large amounts of property; and I predict you will find much more than half the cases have a corporation as either plaintiff or defendant.

Under this legislation, not at the start but at the end—we are bound to contemplate the end in considering it—the great bulk of these cases would go into the Federal courts. I believe, roughly speaking, you would be taking away half the business from the State courts and putting it into the Federal courts.

Certain advantages would result. You would get a uniform series of decisions. You would get rid of the conflict of law that now exists between the States.

Representative GARDNER. What would be the effect in the way of cases that would be taken to the Supreme Court? There is a disposition on the part of all powerful persons and corporations to carry cases to the courts of last resort. Suppose one-half the present business was turned into the Federal courts, and the same proportion as now were carried to the court of last resort?

Mr. STIMSON. As a matter of fact you only get to the Supreme Court in a limited number of cases. You never get to the Supreme Court in ordinary cases. You stop at the Circuit Court of Appeals. That court would have to have a greatly increased number of judges. On the other hand, the advantage would come in, which I have already mentioned, that the decisions would be uniform or consistent, and, so far as that court decided them for the whole country, would be an absolute precedent for all other cases. So that, ultimately, I am inclined to think litigation would diminish.

Mr. GARDNER. Have you ever thought, in this connection, of the passing of an act which should set up in general terms the kind of corporation that should be obnoxious, and provide some method of bringing a given corporation into court, or before some board, to determine whether or not it was doing that kind of business, and provide a remedy through the Interstate Commerce Commission or the Supreme Court or something of that kind? Would not that be a shorter cut to the regulation of trusts?

Mr. STIMSON. I believe we considered that feature in the earlier days of this Commission and it seemed to be impracticable.

Mr. GARDNER. Could not a fine be made almost without limit for the violation of that act? Could it not be deprived of the use of the mails or subjected to other punishment?

Mr. STIMSON. That we went through carefully two or three years ago and rather threw it aside. If you define a certain kind of corporation as obnoxious you are defining not acts but the general character. It is going to be impossible to frame an indictment which shall say: Here is this American Sugar Trust, which is a combination which intends in a general way to get all the sugar plants in the country and stamp out local competition, and it is born in sin and nurtured in iniquity, and we ask that its charter be taken away. That you can not do. It is a State corporation over which Congress has no power. There is no precedent in the criminal law, as far as individuals are concerned, for punishing a man for his general bad character. You have got to produce some specific act; and if you simply pass a statute saying that specific acts shall be punished by a fine, you are going practically no farther than the antitrust law. You can not get directly at the corporation, but you have got to get at individual acts; and you can not get at the enemy in that way.

Mr. GARDNER. It seems to me you could provide against any company engaging in interstate commerce which shall combine so and so, or which shall do so and so by way of watering stock or regulating prices or suppressing competition, and that the Interstate Commerce Commission or some tribunal could be given jurisdiction in that matter.

Mr. STIMSON. That is part of the first remedy—that is leaving the law as it is and working along the same line. Undoubtedly something of that sort could be done, but that carries me into one of the other propositions which I was going to consider.

Mr. JENKS. You said some time ago that the application of the law might be limited by certain exceptions. So, it might be limited further by excepting all corporations below a certain size, and limiting the application of the act to large corporations with a million or 5 million or 10 million capital. Possibly if an act of that sort was passed it would be wise to limit it in that way to begin with.

Mr. STIMSON. Of course the danger is whether they might not get around it.

At 5.15 p. m. the Commission took a recess until 9.30 a. m. September 6.

CONTROL OF INTERSTATE COMMERCE RELEGATED TO THE STATES.

The Commission met at 9.30 a. m. September 6, and Mr. Stimson resumed his address.

I think I will take up the second scheme next, because that is also more radical, and if the Commission should dispose adversely of the two more radical schemes, they naturally would be relegated to the first one, which is the improvement of present conditions. So in a sense logically that comes last, because the adoption of either of the others would shut that out. The second scheme suggested is to have Congress release to the States its interstate-commerce jurisdiction so far as to allow the States themselves to regulate manufacturing or trading corporations engaged in interstate commerce. The State control system is the name which seems most adapted to that scheme. I have not mentioned railways there, because I rather assumed that under that scheme railways would not come in naturally; as any interstate railroad covers more than one State, it would be practically impossible to relegate to any one State complete control of a railroad. This scheme would apply only to trading and manufacturing combinations, those things which the public have most usually in mind in speaking of trusts. First, as to the constitutionality: There is not nearly so much opinion of the court expressed on this as on the scheme we discussed first. Although the opinions cited were mainly negative, there is no opinion on this, either negative or affirmative, except so far as may be inferred from the numerous cases where the courts say that until the national Congress interferes, matters of this sort are left open to the States. It is doubted, however, whether that goes so far as actually to now permit the States to legislate directly upon interstate commerce as such; and it would therefore probably be necessary to have an act of Congress which should relinquish to the States, at least as long as the act was in force, that right which the Federal Government possesses under the Constitution of regulating interstate commerce, so far as the control of these corporations is concerned, either perhaps to the extreme of allowing the States to deny them the rights to do any business within their limits—and that, taking away their power to come in as a corporation, you understand, they already have power to do—or merely by way of allowing the States to make the various conditions and regulations under which the interstate commerce is to be done. There is really no authority, but there certainly seems no reason why that permission should not be given back to the States, at least for the time. There is no authority against it, and although it might evoke some question in Congress, I am inclined to be of the legal opinion that it would be constitutional to pass an act of Congress which, at least while the act lasts, should relegate to the State complete control over trusts. That control each State could then exercise for itself. States would undoubtedly vary very much. Some States where there is a strong antitrust prejudice might go to the length of denying to large corporations obnoxious to their views the right to engage in business in the State at all, to make any contract of any kind. Other States might content themselves with prescribing certain conditions which such a corporation must conform to in its formation. They might, for instance, say that a corporation engaging in business within the State passing the law, if created by another State, must in its organization comply with certain conditions; its stock, for instance, must be paid in in cash; its debt must not exceed so much; under certain conditions its stockholders or directors must be liable for its debts; or any other corporate conditions that a State wishes to impose, either upon such corporations or upon its own, or upon both. Under such a law they would be entitled to treat these interstate-commerce corporations of other States more strictly even than their own corporations. They might, for instance, put restrictions on their doing business far greater than they imposed on their own corporations not doing interstate business. Then having regulated, or not having regulated, a way in which such corporations should be organized in order to obtain the permit to do the business, the State

its business, let us say, is done within State lines; so that there is a matter on which none of the decisions throws us any light. I should be inclined to prefer a statute leaving out the words "in whole or in part," and let the Supreme Court itself determine what the law means, that is, how large a bulk of interstate business a company must have relatively to come under the law. The machinery of that legislation might be either under the guise of a Federal tax or not. Though the tax might be little, it would establish the reason of the law's existence.

It might begin by saying, "Every State corporation doing interstate business shall be subject to a certain excise or franchise tax." That might be the first section. Then it might go on to say, "All corporations doing in whole or in part"—if you like—"such business shall report to Congress," or to some bureau of the Government "annually"—all the facts that it might wish, and so on. Then it would end probably by saying that unless a corporation complied with the law, its contracts should be held invalid, so far as they transcend State lines. Then what would happen would be that when a corporation which really came under the law for any reason did not wish to pay the tax or would not make any return, if it made a sale of goods which was interstate commerce, a defendant might set up its neglect as a defense to payment of the purchase price, as was done in Missouri, and was tried to be done in some other States where they have antitrust statutes.

Mr. FARQUHAR. Do you think there could be sufficiently stringent conditions established through a bureau of publicity?

Mr. STIMSON. Well, in the first place, I do not think you could do it that way. I do not think you could establish the bureau to begin with, and as a mere bureau of inquisition every corporation that wished to evade such a law would become opposed to it. You can only make it practical by providing that the contracts of the corporation which does not comply with the law shall be void, or by the machinery of taxation.

Mr. JENKS. Would it be competent to give the bureau the power of inspection, so that if a company denied doing interstate business the bureau might go through the books and see?

Mr. STIMSON. I should think so. If there were any doubt of that it would be removed by having the tax. Now, as bearing a little on Mr. Farquhar's question——

Mr. FARQUHAR. Does the application of tax carry control and regulation?

Mr. STIMSON. Yes. I think any reasonable inquisition necessary to enforce a tax would be consistent.

Mr. LITCHMAN. Do I understand your position to be that the wiser course is for Congress to pass a law that shall establish national corporations before establishing a bureau to regulate?

Mr. STIMSON. No; I do not go to that length.

Mr. CLARKE. Doubtless you have come to this conclusion, that whether interstate industry is carried on under a Federal corporation act, or under existing laws and policies, somewhat strengthened perhaps, a bureau would be useful in either case?

Mr. STIMSON. Yes; I have come to that conclusion; and whether such a bureau should be the present Interstate Commerce Commission, with enlarged powers or not, I do not know. I am inclined to think it would be wise to divide the labor, so different in nature, and let the Interstate Commerce Commission attend only to railways, and let this other proposed bureau attend only to these other combinations. Both require such an amount of special knowledge that it would be a mistake to confuse them in the same bureau.

Mr. JENKS. If this question came up, of the taxing for interstate-commerce purposes, might not that tax be extended to individuals as well as corporations engaged in interstate commerce?

Mr. STIMSON. Yes; I suppose that might be done; but another point is that we can not tell how far the courts might be willing to go in construing a chain of events

as to make it an interstate-commerce transaction. If the anthracite coal trust, for stance, sold 100,000 tons to a man in the State or town where there was no local nsumption, and as a matter of fact that 100,000 tons was sold by that man within ro or three days outside of the State, the court might take the whole as one transac-on, only intended to evade the law, and apply the penalties of the act as if they ad done it directly. We can not, of course, see how far they will go in deciding such ases to be interstate commerce.

Mr. JENKS. If the tax were made to apply to the persons or firms or corporations ngaged in interstate business, there would be really no inducement for a corporation o turn business over to an individual in that way, especially if the bureau should ave the power of inspection of individuals' business, if they had reason to believe hey were engaged in interstate business.

Mr. STIMSON. There, however, would come in the right of the individual. Such a ax would, of course, have to apply to all individuals; and, although the law was imed at the individual broker, it would necessarily cover every other man in the State whoever wanted to make a contract across State lines. Therefore, I doubt whether public sentiment would stand it.

(7) This is one statement of the first or conservative position; that is, strengthening of the Interstate Commerce Commission and perhaps of the antitrust laws. That, of course, belongs to the first of the three schemes.

(8) "The relinquishment to the States by Congress of the power of legislation as to corporations or combinations conducting interstate-commerce business other than as agencies of transportation." That is precisely scheme number two which I spoke of this morning, so that requires no further comment. That, of course, could not be done under the third scheme, nor would it be done under the first scheme.

(9) "The lowering of the tariff, especially in industries affected by trusts," has been fully debated.

(10) "The denial by Congress, to any State corporation shown to be obnoxious, of the right to do interstate business, with its various agencies, of the right to the use of the mails, of the right to sue in the Federal courts, coupled with heavy franchise taxation, graded if necessary, by the Federal Government." The main part of that falls under what we are just discussing, and could be done under the first scheme. That is, all of this that has to do with franchise taxation, with the right to sue in the Federal courts. As to the right to the use of the mails, I have much doubt. The full history of English law shows that you must punish an individual for an act and not for a disposition, and at least in modern times is opposed to anything resembling outlawing. There is no precedent in our system to-day for anything like outlawing at all, and this would practically be outlawing a corporation from the mails. Suppose you had a law which stated that a corporation which offended against this antitrust statute, as amended and passed by Congress, should be indefinitely or forever shut out from the mails. Suppose that corporation completely reformed in the year following. I think that the whole temper of the public would be against such legislation as that. It is not the way we do it—we punish only the individual act and, therefore, I am inclined to reject any notion that you could outlaw an offending corporation permanently in any particular, either outlawing from mail facilities or outlawing from issuing checks or drafts or other legal documents. I do not believe in it; do not believe it is either wise or practical. The individual transaction complained of could be absolutely outlawed, and you could destroy any check relating to it or any document relating to it, or quash any suit brought upon it; but I do not think on the whole it is worth considering any proposition to permanently outlaw anything nationally, even an offending corporation that may offend once or twice or a few times. Even if you did, it would be perfectly simple for that corporation to reorganize under any State law with a new name.

I have now been over this pretty generally, and you will see that quite a numb of the ten concrete remedies can be carried into effect by Congress and by the Sta legislatures under what is substantially the present system.

GRADUATED TAXATION.

Mr. FARQUHAR. There is a public opinion attached to franchise taxation, graded, if necessary, by the Federal Government. All antitrust people say, tax them out o existence, and in that way get rid of them. Have you any proposal to make abou the grading of those taxes?

Mr. STIMSON. Taxation may now be applied by Congress to such State corporation as do in fact an interstate business. That taxation would, of course, have to b annual, because otherwise you would lose your control the moment the tax was paid once. It should be an annual tax, requiring annual reports, etc. On the question whether it should be graded or not, the Commission will determine according as it takes the affirmative or the negative view of the proposition that a large aggrega tion of capital is objectionable in itself; that is, in point of public policy. The posi tion that it is objectionable is a logical one to take. It was in fact taken by our early legislators, who nearly always limited the amount of capital with which any corpo ration could be organized. I could stand up here and argue that experience has shown that it is not wise for a State to allow the creation of an artificial corporation too big to control. It is a logical proposition. However, modern tendency is the other way. The State of Massachusetts has just removed all restrictions on size, and generally throughout the country legislatures have taken that view. If the Commis sion, and then if Congress, believe the affirmative, namely, that large aggregations of capital are inherently objectionable—inherently a menace to the welfare of the people or the power of the State—then tney will impose a graduated tax; if they do not think so, they won't.

Mr. JENKS. But even granting that the very large corporation is not injurious, yet on general principles, if the large corporation has special advantages it ought to pay more in order to be upon a fair basis.

Mr. STIMSON. That is true. There are in our testimony a great many questions asked and answered as to whether large aggregations of capital have an increased facility out of proportion to their increased size. If so, the large corporation may properly pay an increased tax for that reason.

Mr. JENKS. Would it be possible to impose this franchise tax more or less in pro portion to the profits of the business from year to year? You state it must be an annual tax. Now, the idea of the thing, of course, would be to have this annual tax more or less in proportion to the profits of the business from year to year. How far would it be practicable under the Constitution to go in that direction?

Mr. STIMSON. I understand all franchise taxes to be purely arbitrary. No question of proportion comes in. If it did come in, such a law would follow out that propor tion. The objection would be, it seems to me, that the corporations which do both an interstate and a State business would put their unprofitable transactions into the interstate business through the device of selling through an agent, and their really fat contracts they could keep within State lines.

Mr. FARQUHAR. Would not a fair way be to take gross receipts instead of profits, so that no matter how the records might be kept they could not escape the tax?

Mr. STIMSON. I should think that would be better.

Mr. JENKS. As long as the chief feature is inspection and publicity, the collection of the tax would be of much less importance to begin with. Ultimately it might become of a great deal of importance; because if this plan worked well, after a while the United States Government might find it advisable to make this a sort of balance wheel in its whole tax system.

Mr. STIMSON. I believe, also, public sentiment would demand it in time, and in a sense they ought to. The franchise of immortality given to these artificial beings has never yet been taxed at its full value.

To conclude: We closed yesterday with discussing the third scheme, for a Federal corporation law and its probable nature; we have passed over the second, so, to-day, it may be worth while to sketch out the kind of legislation that would take place if the Commission adopted the first of these three schemes.

If you are to recommend this first and most conservative plan—an extension of the present system—in the first place you would recommend to all States the adoption of strict and well-considered corporation laws of their own, protecting both the creditor and the consumer, and perhaps the stockholder. Then, in connection with that, you would recommend to the States that they pass statutes denying the right to corporations of any other State to come in and do business unless such corporations were organized under a law substantially similar to their own. The Industrial Commission would recommend that Congress should tax, by an annual franchise tax, all State corporations doing an interstate business—I think I would blink the question—"in whole or in part," because there you are going to get into difficulties. Make it general and let the courts adapt it. It would then recommend the establishment of a national permanent bureau or commission which should have power—on the whole it should not be the present Interstate Commerce Commission—which should have exclusive jurisdiction of collecting this annual tax, and incidentally of getting such necessary returns and so on as they would require, and issuing a license to any State corporation which wished to do an interstate business. Then, if you wished to go a step further, the law would probably go on and say that such a certificate should be denied to any State corporation which offended against the provisions hereafter stated in the law, and then you would state what those provisions were. You could put in that they should not make a different price in one locality from that in another, allowing for differences in transportation, or that the stock of the corporation should be paid in full in cash or property; in short, all the conditions that you would have wished to put in the corporation law which created the corporation itself. Of course, that would be going a step beyond. It would be perfectly possible to stop at the tax, and the Federal bureau to collect the tax, and provision for the annual return and publicity, with full power of inspection added.

Mr. PHILLIPS. That could include the rebate system, making it criminal to receive rebates?

Mr. STIMSON. Yes; or make it highly penal, and provide that the certificate to do business should be canceled if convicted of so doing; anything that you chose to put in.

I do not wish to indicate any leaning in my own mind, but I would point out that this scheme may be regarded as a preliminary step to what I call scheme No. 3. In other words, if this is recommended and done, and you have got the Federal bureau and the Federal tax upon State corporations doing interstate business, after some years' working, if found advisable, and the public mind were not unwilling, it would be quite a short step from that to say: On the whole we think, while this works pretty well, that we are hampered by the existence of State corporations, and we think corporations now doing interstate business, and hitherto getting an annual certificate, had better organize under a Federal law, which we hereby enact. At least it is a good way of making two bites of a cherry. If the Commission think it too radical and too startling to adopt scheme No. 3, they had better at least adopt scheme No. 1, with scheme No. 3 in mind.

As I said yesterday, it might be inadvisable for the Commission to go to the length of drawing a bill covering the third scheme in great detail, because any bill invites opposition and prejudice on points of detail. A thing that is left more or less in general terms is safer, and I think it most inadvisable to call forth the opposition that any definite act would draw.

STATEMENT OF PROF. ERNEST W. HUFFCUT,

Of Cornell University,

REGARDING CONSTITUTIONAL ASPECTS OF THE FEDERAL CONTROL OF CORPORATIONS.

[Reprinted from Vol. I of the Reports of the Industrial Commission.]

It seems to be generally conceded that there is need of a stricter control than now exists of the large corporate combinations, monopolistic in tendency and dominating in fact, which are the most striking feature of our present industrial and commercial development. How this stricter control shall be attained is partly a question of constitutional power and partly a question of political and economic expediency. The problem concerns itself with two classes of corporations—those engaged in interstate commerce and those not engaged in interstate commerce. Most of the corporations of both classes are the creations of State legislation, and normally would be within the control of the State that created them. But most corporations having any considerable business pass beyond the borders of their own State and into the territory of sister States, and when within the territory of another State they become subject to the laws of that State or of the United States, so far as those laws may constitutionally operate upon and affect them and their business undertakings. Thus the problem of corporate control may involve three factors—the State that creates the corporation, the State into which it goes, and the United States.

POWER OF STATES AS TO INTERSTATE BUSINESS.

Briefly stated, the result is this: If the corporation is not engaged in interstate commerce, it is subject to control by the State of its creation, subject to the constitutional prohibitions against impairing the obligation of contracts and depriving it of its property without due process of law. It becomes subject to the laws of any other State into which it goes, and that State may regulate its operations even to the extent of prohibiting it from doing any business there whatever. What a State may do with corporations of its own creation it may do with such foreign corporations admitted within its territory. (Hoper *v.* California, 155 U. S., 648; New York State *v.* Roberts, 171 U. S., 658; Orient Ins. Co. *v.* Daggs, 172 U. S., 557.) If, on the other hand, it be engaged in interstate commerce, then the third factor—the United States—must be introduced, for since the Federal Constitution gives to Congress the power to regulate interstate commerce no State may usurp that power either by denying to the corporation the right to conduct business in the State (Pensacola Telegraph Co. *v.* Western Union Telegraph Co., 96 U. S., 1; Crutcher *v.* Kentucky, 141 U. S., 47) or by regulating or taxing such interstate trade (Brown *v.* Maryland, 12 Wheat., 419; State Freight Tax, 15 Wall., 232; Gloucester Ferry Co. *v.* Pennsylvania, 114 U. S., 196).

If the corporation be one employed by the National Government for some end of its own, still less may the State deny to it necessary privileges or regulate its business. (Stockton *v.* Baltimore and N. Y. R. Co., 32 Fed. Rep., 9; Horn Silver Mining Co. *v.* New York State, 143 U. S., 305.)

The result of this distribution of powers under the Federal Constitution has been to leave the States largely helpless to remedy evils which are thought by the people of the States, or of some of them, to be a menace to their welfare. In yielding control of interstate commerce to the Federal Government there has been naturally some serious loss to the States in general governmental power, quite distinct from the mere inability to regulate commerce. In the desire to avoid the evils of separate and antagonistic control of trade and commerce the States have deprived themselves

of the power to control their own internal affairs whenever those affairs are connected in any direct way with commerce between the States or with foreign nations.

In this situation of affairs the question naturally arises, What is the appropriate remedy? Laying aside all suggestions of change in the organic law, it would seem that there are three possible solutions:

THREE POSSIBLE REMEDIES.

First. The present system of dual control may be maintained with an increased harmony of action among the States and between the States and the National Government, such harmony of action being directed toward the stricter control of monopolistic combinations.

Second. The National Government may, by Congressional action, give to the States a larger, perhaps an exclusive, control of corporations engaged in interstate commerce.

Third. The National Government may take to itself a larger, perhaps an exclusive, control of corporations engaged in interstate commerce.

DUAL SYSTEM—STATE AND FEDERAL CONTROL.

The first proposition demands an examination of the constitutional provisions by which the relative powers of the State and Federal governments are determined and of the effect given to these provisions by judicial decisions.

Three provisions of the Federal Constitution confer upon Congress the extensive powers "to regulate commerce with foreign nations and among the several States and with the Indian tribes;"[1] "to lay and collect taxes, duties, imposts, and excises;"[2] "to establish post-offices and post-roads."[3]

The exercise of these comprehensive powers may be said to be subject to these limitations: "Direct taxes shall be apportioned among the several States * * * according to their respective numbers;"[4] "no capitation or other direct tax shall be laid, unless in proportion to the census or enumeration hereinbefore directed to be taken;"[5] "no tax or duty shall be laid on articles exported from any State;"[6] "no preference shall be given by any regulation of commerce or revenue to the ports of one State over those of another, nor shall vessels bound to or from one State be obliged to enter, clear, or pay duties in another;"[7] "no person shall be * * * deprived of life, liberty, or property without due process of law;"[8] "the citizens of each State shall be entitled to all privileges and immunities of citizens in the several States."[9]

The above powers and limitations have been the subject of a very large number of decisions by the Supreme Court. As thus interpreted the provisions may be said to measure the power of Congress over interstate commerce and the extent to which such control has been taken from the States. The conclusions may be stated first in general terms and afterwards in the form of specific applications. In general terms these conclusions are warranted: In the matter of interstate commerce the United States are but one country. (Robbins *v.* Shelby Taxing District, 120 U. S., 489, 494.) What is commerce is to be determined by the usages of the commercial world and not by the declaration of a particular State. (Bowman *v.* Chicago & N. W. Ry., 125 U. S., 465; Leisy *v.* Hardin, 135 U. S., 100.) The reasons which may have caused the framers of the Constitution to repose the power to regulate commerce in Congress do not affect or limit the extent of the power. (Leisy *v.* Hardin, 135 U. S., 100; Addyston Pipe & Steel Co. *v.* United States, 20 S. C. R., 96.) When Congress has not acted its inaction is to be taken as an indication of its will that commerce shall be free from any restrictions. (Robbins *v.* Shelby Taxing District, 120 U. S., 493.) State laws

[1] Art. I, 8, 3.
[2] Art. I, 8, 1.
[3] Art. I, 8, 7.
[4] Art. I, 2, 3.
[5] Art. I, 9, 4.
[6] Art. I, 9, 5.
[7] Art. I, 9, 6.
[8] Amend. V.
[9] Art. IV, 2, 1.

passed to regulate interstate commerce are invalid. (Gibbons *v.* Ogden, 9 Wheat., 1.) State laws passed with another intent or in the reasonable exercise of the police power, but which incidentally affect interstate commerce, are valid if local in operation and reasonable in their incidental effect upon such commerce. (Wilson *v.* Blackbird Creek Marsh Co., 2 Pet., 245; Mayor *v.* Milns, 11 Pet., 102; Cooley *v.* Board of Wardens, 12 How., 299; County of Mobile *v.* Kimball, 102 U. S., 691; Morgan Steamship Co. *v.* Louisiana, 118 U. S., 455; Plumley *v.* Massachusetts, 155 U. S., 461; Hennington *v.* Georgia, 163 U. S., 299; Patapsco Guano Co. *v.* North Carolina, 171 U. S., 345; Lake Shore & Mich. So. Ry. *v.* Ohio, 173 U. S., 285.) But State laws which unreasonably affect interstate commerce, although passed for local purposes or in the exercise of the police power, are invalid. (Passenger Cases, 7 How., 283; Welton *v.* Missouri, 91 U. S., 275; Walling *v.* Michigan, 116 U. S., 446; Wabash, etc., R. *v.* Illinois, 118 U. S., 557; Robbins *v.* Shelby Taxing District, 120 U. S., 489; Leisy *v.* Hardin, 135 U. S., 100; Schollenberger *v.* Pennsylvania, 171 U. S., 1.)

The application of these general conclusions to specific cases enables us to appreciate the comparative impotence of the States in the matter of controlling interstate commerce or the persons or corporations engaged in it. A State can not exclude a foreign corporation engaged in interstate commerce. (Pensacola Telegraph Co. *v.* Western Union Telegraph Co., 96 U. S., 1; Crutcher *v.* Kentucky, 141 U. S., 47.) A State can not tax a corporation upon its interstate commerce (Brown *v.* Maryland, 12 Wheat., 419; State Freight Tax, 15 Wall., 232; Gloucester Ferry Co. *v.* Pennsylvania, 114 U. S., 196), not even though created under its own laws (Philadelphia, etc., Steamship Co. *v.* Pennsylvania, 122 U. S., 326). Nor can it tax the agents of such a corporation or of a natural person for the privilege of doing business in the State. (Walling *v.* Michigan, 116 U. S., 446; Robbins *v.* Shelby Taxing District, 120 U. S., 489.) A State can not fix the toll on a bridge connecting it with a sister State and owned by one of its own corporations. (Covington, etc., Bridge Co. *v.* Kentucky, 154 U. S., 204.) A State can not fix a rate for carrying interstate commerce. (Wabash etc., Rwy. *v.* Illinois, 118 U. S., 557.) A State can not absolutely fix the rates for the carriage of domestic (intrastate) commerce, for if its rate be held unreasonably low the legislature deprives the carrier of property without due process of law. (Fourteenth Amendment; Smyth *v.* Ames, 169 U. S., 466.) A State can not require carriers to sell 1,000-mile tickets at less than the usual rate fixed for other tickets. (Lake Shore and Mich. S. Rwy. *v.* Smith, 173 U. S., 684.) A State can not exclude oleomargarine (Schollenberger *v.* Pennsylvania, 171 U. S., 1; Collins *v.* New Hampshire, 171 U. S., 30); nor intoxicating liquors (Bowman *v.* Chicago and N. W. Rwy., 125 U. S., 465; Leisy *v.* Hardin, 135 U. S., 100; Scott *v.* Donald, 165 U. S., 58); nor immigrants (Henderson *v.* New York, 92 U. S., 259); nor even "lewd and debauched women" (Chy Lung *v.* Freeman, 92 U. S., 275).

In the exercise of its police power a State is permitted to legislate for local purposes affecting the health, morals, safety, or convenience of its people, provided the legislation does not directly or unreasonably affect interstate commerce. A State may pass local pilotage laws (Cooley *v.* Board of Wardens, 12 How., 299); harbor improvement laws (County of Mobile *v.* Kimball, 102 U. S., 691); quarantine laws (Morgan Steamship Co. *v.* Louisiana, 118 U. S., 455); laws forbidding the heating of cars with stoves (New York, etc., R. *v.* New York, 165 U. S., 628); laws forbidding the running of Sunday freight trains (Hennington *v.* Georgia, 163 U. S., 299); laws requiring a reasonable number of through trains to stop at populous centers (Lake Shore and Mich. S. Rwy. *v.* Ohio, 173 U. S., 285); but not laws requiring a through train to go out of its direct route to land passengers (Illinois Central R. *v.* Illinois, 163 U. S., 142); laws requiring the prompt delivery of telegrams (Western Union Tel. Co. *v.* James, 162 U. S., 650); laws to prevent fraud in the sale of oleomargarine (Plumley *v.* Massachusetts, 155 U. S., 461); reasonable inspection laws (Potapsco Guano Co. *v.* North Carolina, 171 U. S., 345); but not if unreasonable or a cover for the regula-

tion of commerce (Minnesota *v.* Barber, 136 U. S., 313; Brimmer *v.* Redman, 138 U. S., 78; Scott *v.* Donald, 165 U. S., 58).

While the States are thus restricted and limited in their control of interstate commerce and of persons and corporations engaged in it, the United States are equally circumscribed in their control of nontrading enterprises and of corporations not engaged in interstate commerce or in some business over which the constitution gives Congress authority. As was held in the Knight case (156 U. S., 1), the antitrust law does not extend to a combination for the manufacture of sugar, because manufacture is not trade or commerce. Congress, therefore, could not suppress a monopoly for the manufacture of sugar, while the States could not suppress a monopoly for the interstate sale of sugar. The States could exclude the manufacturing corporations, for since a corporation is not a citizen within the meaning of Article IV, section 2, subsection 1, of the Constitution, it is not entitled to the privileges and immunities of citizens in the several States. (Blake *v.* McClung, 172 U. S., 239; Orient Ins. Co. *v.* Daggs, 172 U. S., 557.) But the States could not exclude the trading corporations, for the States can not regulate interstate commerce. If, then, the corporations are both manufacturing and trading corporations, how are they to be dealt with? It is obvious that the product of the sugar combination is to go largely into interstate commerce and will pass beyond the control of the States. If one State offers a refuge to the manufacturing corporations, the other States are powerless. Forty-four States may pass uniform laws to control such combinations; the forty-fifth may render this combined action in large part nugatory by chartering and protecting the very combination which it is the object of the forty-four to suppress. In such case it would require a harmony of action among the States to prevent a monopolistic manufacturing combination and cooperative action on the part of the United States to prevent a monopolistic trading combination. In other words, forty-six distinct jurisdictions must work in concert in order to protect all the people of the United States from combinations formed to control the prices of raw material and the output and price of the finished products.

Under its power to regulate commerce Congress has thus far passed but two acts calculated to aid the States in the control of monopolistic enterprises, namely, the interstate-commerce act of 1887 and the antitrust act of 1890.

The interstate-commerce act was passed to regulate interstate transportation rates after it had been decided (Wabash, etc., R. *v.* Illinois, 118 U. S., 557) that the States could not regulate such rates within their own territory. This act, as interpreted by the courts, places upon interstate carriers a prohibition against unjust or unreasonable rates and against unjust discrimination, but otherwise leaves them as free as they were at common law to make special contracts looking to the increase of business, to classify traffic, to adjust and apportion rates so as to meet the necessities of commerce, and generally to manage their own business in their own way. (Interstate Commerce Commission *v.* Railway Co., 167 U. S., 479.) The commission appointed under the act is charged mainly with the duty of investigating questions as to the reasonableness of the rates established or questions as to unjust discriminations, and is not authorized to fix rates. (Interstate Commerce Commission *v.* Alabama Midland Rwy., 168 U. S., 144.) To this end it may require the attendance of witnesses and the production of books and papers. (Interstate Commerce Commission *v.* Brimson, 154 U. S., 447; 155 U. S., 3.) But its powers as thus defined are not extensive, and perhaps the criticism of Mr. Justice Harlan (168 U. S., 176) is justified that "it has been shorn by judicial interpretation of authority to do anything of an effective character."

The antitrust act (26 Stat. L., 209) was passed to prohibit monopolistic combinations in restraint of interstate or international commerce. It has been the subject of several adjudications by the Supreme Court, and from these it is possible to deduce the following conclusions as to the effect of the legislation: (1) A restraint of busi-

ness not included in the category of interstate commerce is not within the prohibitions of the act (United States v. E. C. Knight Co., 156 U. S., 1); (2) a combination which, although affecting interstate commerce, does not restrain it—that is, does not exclude the operation of competition—is not within the act (Anderson v. United States, 171 U. S., 604); (3) any combination which restrains interstate commerce, whether such restraint be illegal at common law or not, is illegal under the act and may be enjoined at the suit of the United States, although the rates fixed by the combination may be reasonable and fair (United States v. Trans-Missouri Freight Ass'n, 166 U. S., 290; United States v. Joint Traffic Ass'n, 171 U. S., 505; Addyston Pipe and Steel Co. v. United States, 20 S. C. R., 96).

The importance of the last decision rendered by the Supreme Court under this act, accompanied as it is by the rare spectacle of a unanimous court, justifies more than a passing reference. In Addyston Pipe and Steel Co. v. United States a combination of iron-pipe manufacturers was enjoined from carrying out a contract the purpose of which was to exclude competition among the parties to the contract. From the opinion of Mr. Justice Peckham, concurred in by the whole court, we gather these instructive conclusions as to the powers of Congress under the commerce clause of the Federal Constitution and the extent to which it is deemed to have exercised those powers in the passage of the antitrust law:

(1) The reasons which may have caused the framers of the Constitution to repose the power to regulate interstate commerce in Congress do not affect or limit the extent of the power itself.

(2) The power is not limited or restricted by the constitutional guaranties of private rights, such as the liberty to enter into contracts, under the provision that "no person shall be deprived of life, liberty, or property without due process of law."

(3) On the contrary, the provision regarding the "liberty" of a person is itself limited by the commerce clause, and the power of Congress to regulate interstate commerce carries with it the right to enact laws forbidding persons to enter into private contracts which directly and substantially (and not merely indirectly, remotely, incidentally, and collaterally) regulate to a greater or less degree commerce among the States.

(4) Under the antitrust act any combination which directly restrains the purchase, sale, or exchange of commodities among the several States is illegal, and if it destroys competition it must be held to restrain trade. The reasonableness of the restriction is of no consequence.

This establishes a radical rule concerning the power of Congress over interstate commerce and a radical rule in the application of the provisions of the antitrust act. It may be said to mark the decisive line between the rights of the individual under the Constitution and the rights of the public to control the individual for public ends. Happily it gives full force and effect to Congressional legislation intended to protect the people from monopolistic combinations and points the way toward future constitutional legislation.

We must not, however, lose sight of the division between State and Federal authority. Taking the Knight case (156 U. S., 1) at the one extreme and the Addyston case (20 S. C. R., 96) at the other, we see how nicely the State control and the Federal control of monopolistic combinations are balanced, and how difficult it may be to adjust the balance in such a way as to prevent all the evils aimed at and at the same time keep within the constitutional power of each government. Congress could not regulate the sugar monopoly; the States could not regulate the iron-pipe monopoly. If now, in either case, the combinations were to take the form of a corporation and not a trust the difficulties might be increased. To be sure, if neither a State nor the United States would charter the corporation the scheme of corporate monopoly would fail. But too many States are bidding for such corporations to enable us to entertain the hope that a corporate combination can not somewhere find a congenial and foster-

ing home. And should every State refuse to welcome the corporation, there yet remains the possibility of securing corporate charters in foreign countries. I note, for instance, in the New York Tribune for January 7, that Quebec is the latest bidder for corporate consideration, and that a representative of that province says that, "In case of the development of drastic 'antitrust' legislation in the United States, to go to Quebec will be the easy and perhaps only solution for many of the large industrial combinations in the United States." No State can forbid the entrance of such a corporation for international or interstate trade, although probably the United States could do so, unless restrained by some treaty provision. On the other hand, the United States could not forbid its entrance for manufacturing or nontrading purposes, although any State could do so. Hence a very harmonious scheme among the governments of the States and the United States would be necessary to prevent the successful operations of such corporations.

The joint control of corporations by the States and the National Government, while it has led to a good many inconveniences, has not heretofore seemed wholly inadequate to meet existing conditions. But with the present marked tendency to consolidate competing interests into one corporation, and with the present marked tendency to offer to such corporate aggregations a favorable habitat, the question becomes a practical and pressing one whether the dual control heretofore exercised ought not to make way for an undivided control—not of interstate commerce, for that is already solely in the hands of Congress, but of corporations engaged in interstate commerce—either by giving to the States, if that be possible, full power over corporations engaged in interstate commerce, or by reserving to the Federal Government, if that be possible, full control over them.

DELEGATION OF ADDED POWER BY CONGRESS TO STATES.

Turning now to the second possible solution of the problem, we are met at the threshold with these questions: May Congress delegate to the States full control over corporations engaged in interstate commerce? May it place such corporations in the same position as concerns their right to do business in a State as that occupied by nontrading corporations? May it enact constitutionally that a corporation engaged in interstate commerce shall upon entering the territory of a State be subject to the laws of that State, and that its right to enter the territory of a State shall depend upon the laws of that State?

There is no direct authority known to me upon this point. But such authority as there is casting light upon the problem seems to support the thesis that Congress may grant to a State regulative power over interstate commerce, which, in the absence of such legislation, the State would not possess. Thus where the Supreme Court had held invalid a State law authorizing a bridge over the Ohio because such bridge obstructed navigation, it thereafter held that a subsequent act of Congress declaring such bridge to be a lawful structure superseded its former judgment and validated the State legislation. (Pennsylvania *v.* Wheeling and Belmont Bridge Co., 18 How., 421.) Again, after the Supreme Court had decided (Leisy *v.* Hardin, 135 U. S., 100) that State legislation forbidding the sale of intoxicating liquors imported into the State in the original package was invalid as a regulation of commerce, it afterwards held that a subsequent act of Congress (the "Wilson Act," 26 Stat. L., 313), providing that such liquors should be subject to the State laws, was a valid exercise by Congress of its power to regulate commerce, and that the State laws thereafter operated upon and affected such liquors (In re Rahrer, 140 U. S., 545). It is true that the court is careful to say that Congress did not delegate thereby to the States its power to regulate interstate commerce, nor use terms of permission to the States to act, but that it simply removed an impediment to the enforcement of State laws created by the absence of a specific indication of the will of Congress. It is familiar doctrine that where Congress has not acted its silence is to be taken as an indication of its will that com-

merce shall be free. By speaking in this case Congress repelled this presumption and indicated how, and to what extent, interstate trade in a particular article of commerce should be restricted. But this it did by subjecting the article to the laws of the various States. It is obvious that Congress thereby gave to every State power to regulate interstate traffic in intoxicating liquors to the extent of prohibiting a resale in the original package.

In the recent case of Scott *v.* Donald (165 U. S., 58, 107), arising under the South Carolina dispensary law, it was held that the law was invalid so far as it forbade the shipping of liquor into the State for the use of the consignee, because the Wilson Act did not authorize the State law to operate until the liquor was in the State and at its destination. In Rhodes *v.* Iowa (170 U. S., 412) it was held that the Wilson Act did not permit the State to stop the liquor at the State line or to operate upon it until it was in the hands of the consignee. In Vance *v.* Vandercook Co. (170 U. S., 438) it was held, under the South Carolina dispensary law, that the law as amended, was valid so far as it forbade the sale of original packages, although the State did not prohibit the sale of such liquors altogether, but merely regulated it.

Another example of Congressional delegation of power to the States over interstate commerce is found in the act (U. S. Rev. Stat., sec. 4280) subjecting explosives in transit through a State to the laws of the State and authorizing States to prohibit the introduction of such explosives for sale or use at their discretion. A very early example of the same sort of legislation is found in the act of February 28, 1803 (2 Stat. L., 205), forbidding the importation from abroad of negroes into any State whose laws forbade such importation. In the same way State quarantine laws (1 Stat. L., 619) and State pilotage laws (U. S. Rev. Stat., 4235, 4236) have by Congressional action been made operative upon international and interstate commerce. So also Congress has yielded to the States power to tax the shares of national banks (U. S. Rev. Stat., 5219).

There is at present a Federal statute forbidding the importation of convict-made goods (30 Stat. L., 211, § 31). A similar State law forbidding the introduction into the State of convict-made goods has been declared unconstitutional because regulative of interstate commerce (People *v.* Hawkins, 157 N. Y., 1). But if, following the suggestion of Governor Roosevelt in his last annual message, Congress should enact that the laws of a State shall operate upon and affect convict-made goods brought from another State equally with those made and sold in the State, would not this be a valid method of regulating commerce within the decision based upon the Wilson Act (In re Rahrer, 140 U. S., 545)?

The civil-rights laws of the States have been held invalid so far as they regulate interstate commerce (Hall *v.* De Cuir, 95 U. S., 485). But if Congress should provide that such laws shall operate upon and affect interstate commerce, would not such a law fall within the same doctrine?

If, now, Congress may enact that the laws of a State passed to restrict the sale of intoxicating liquors, or the dangers arising from the transportation and use of explosives, shall operate upon and affect interstate commerce, and if, as suggested, Congress may enact that the laws of a State concerning convict-made goods or civil rights, etc., shall operate upon and affect interstate commerce, is it not reasonable to hold that it may enact that the laws of a State concerning foreign corporations shall operate upon and affect those engaged in interstate commerce equally with those engaged in insurance (Paul *v.* Virginia, 8 Wall., 168) or bill brokerage (Nathan *v.* Louisiana, 8 How., 73) not held to be engaged in interstate commerce? It must be remembered that a corporation is not a citizen within the meaning of Article IV, section 2, of the Federal Constitution, and all that prevents a State from controlling a foreign corporation is the commerce clause. If, in the exercise of its powers under that clause, Congress should remove the impediment to State regulation of such corporations, there would seem to be no reason why the States could not protect themselves by their own laws

against the operations of monopolistic combinations. They may do so now as to combinations, whether in the form of corporations or "trusts," created for nontrading purposes. They could do so then as to trading corporations, and thus a very complete scheme of State control over corporations could be worked out.

To sum up: A corporation has no inherent right to go into another State than that of its origin. The only corporations that escape this rule are those engaged in interstate commerce (or those chartered by Congress, which are not now under consideration). Congress in the exercise of its powers to regulate commerce among the States and with foreign nations, may remove the impediment to the operation of State laws upon such commerce. It may, therefore, remove the impediment to the operation of State laws upon corporations engaged in interstate or international commerce. This would commit the control of all domestic and foreign corporations in any State to the legislature of that State.

INCREASED FEDERAL CONTROL.

Turning now to the third possible solution of the problem, we face the inquiry whether the United States may, under the Federal Constitution, limit the right of corporations to engage in interstate commerce to corporations created by Congress, and thus take to itself the entire practical control of such corporate enterprises.

There are, perhaps, three ways in which Congress could effectively exercise a power to restrict or destroy the business of State corporations engaged in interstate commerce. (1) It might forbid to such corporations as fall within a definition of monopoly the use of the mails. (2) It might tax State corporations upon their interstate commerce. (3) It might directly prohibit State corporations from engaging in interstate commerce.

EXCLUSION FROM MAILS.

Congress has exercised the right to exclude from the mails letters or circulars concerning lotteries or other enterprises in which there is the element of chance (act of September 19, 1890; 26 Stat. L., 465), and this legislation has been held constitutional. (In re Jackson, 96 U. S., 727; In re Rapier, 143 U. S., 110.) It has exercised the right to prohibit the carriage of indecent publications and articles in the mails or by interstate carriers. (25 Stat. L., 496; 29 Stat. L., 512.) It has forbidden the transportation of diseased cattle or meat which has been exposed to infection. (23 Stat. L., 31; 26 Stat. L., 1089.) All of these acts are a proper exercise of the Federal police power. But it is now clear that the police power is not confined to the protection of health or morals or safety, but extends to the protection of the reasonable and convenient exercise of private rights. (Lake Shore and Mich. So. Rwy. *v.* Ohio, 173 U. S., 285.) Why, then, may not Congress denounce monopolistic combinations, whether in the form of corporations or not, as a hindrance to such rights, and deny to such combinations the use of the mails? If it may denounce gambling contracts into which persons voluntarily enter, and forbid such contracts to be made or executed by the use of the mails, a fortiori it may denounce a monopoly which compels the people at large to buy the necessaries of life at price fixed by the monopoly, and may deny to it the use of the mails.

EXERCISE OF TAXING POWER.

In like manner, Congress has exercised its power of taxation to render impossible, because unprofitable, the continuance of a business by a State corporation over which Congress desired to assume the control vested in it by the Federal Constitution.

When the National Government determined to suppress the evils arising from the want of uniformity and adequate control in the laws of the various States authorizing or permitting the issue of circulating notes as a medium of exchange, it resorted to the expedient of providing for the formation of banking corporations under a Federal

law and the reorganization of State banking corporations under the Federal law, and supplemented this legislation with a tax on the issues of State banks which rendered it impossible for them to continue their issues at a profit. This legislation was sustained as within the constitutional powers of Congress. (Veazie Bank *v.* Fenno, 8 Wall., 533; National Bank *v.* United States, 101 U. S., 1.) And it was held that it required no concurrent action on the part of the States to enable the State corporations to reorganize as Federal corporations. (Casey *v.* Galli, 94 U. S., 673.)

The logical result of this decision was recognized by the court. Mr. Justice Nelson, in dissenting from the judgment of the court in Veazie Bank *v.* Fenno (p. 556), pointed it out very distinctly in these words: "It is true that the present decision strikes only at the power to create banks, but no person can fail to see that the principle involved affects the power to create any other description of corporation, such as railroads, turnpikes, manufacturing companies, and others."

FEDERAL INCORPORATION LAWS.

The legislation in question, supplemented by the decision that it is a valid exercise of the Federal power, suggests the method of securing a uniform Federal control of corporations engaged in interstate commerce. A national act which should provide for the incorporation of trading companies and the reorganization of State trading corporations under the Federal act, supplemented by a tax upon the interstate business of the State corporations, would lead to a uniformity similar to that attained in the case of banks of issue, and would place all such interstate business, so far as it is carried on by corporations, strictly within the control of the Federal power.

But would such legislation be constitutional? I believe that it would, and for the following reasons:

First. The power to regulate interstate commerce is unquestionably confided exclusively to Congress, and is restricted, if at all, by Congressional acquiescence in the exercise of a concurrent power by the States so far as that operates for merely local purposes and is not designed to regulate, and does not directly regulate, such commerce. (Gibbons *v.* Ogden, 9 Wheat., 1; Brown *v.* Maryland, 12 Wheat., 419; Cooley *v.* Port Wardens, 12 How., 299; The License Cases, 5 How., 504; County of Mobile *v.* Kimball, 102 U. S., 691; Bowman *v.* Chicago & N. W. Ry., 125 U. S., 465; Leisy *v.* Hardin, 135 U. S., 100; In re Rahrer, 140 U. S., 545; Addyston Pipe & Steel Co. *v.* United States, 20 S. C. R., 96.)

Second. Where Congress is given a power it is given the supplementary power "to make all laws which shall be necessary and proper for carrying into execution the foregoing powers" (Const. Art. I, sec. 8, subs. 18), and this includes the power to create such corporations or agencies of the Government as may be deemed necessary (McCulloch *v.* Maryland, 4 Wheat., 316; Luxton *v.* North River Bridge Co., 153 U. S., 525). In the exercise of this power Congress has created banking corporations (1 Stat. L., 191; 12 Ib., 666; 13 Ib., 99; 21 Ib., 66; 22 Ib., 162; Rev. Stat., p. 992); railroad and telegraph companies (12 Stat. L., 489; 13 Ib., 365; 14 Ib., 292; 16 Ib., 573; 17 Ib., 59); bridge companies (26 Stat. L., 268); the Nicaragua Canal Company (25 Stat. L., 673); savings and trust company (13 Stat. L., 510); insurance company, though perhaps this was while acting as a legislature for the District of Columbia (13 Stat. L., 428; 27 Ib., 29), and perhaps other corporations.

It has been held that the States can not tax such corporations without the consent of Congress (California *v.* Pacific R. R. Co., 127 U. S., 1), and that under the act of March 3, 1875, they are entitled to remove their causes into the Federal courts (Pacific Railroad Removal Cases, 115 U. S., 2), though doubtless Congress could deny them this right if it thought fit.

Such corporations might, and probably would, do a domestic business within the States, but if so they would be subject to the rule that where Congress creates a corporation and remains silent as to its merely domestic business, its silence is equiva-

lent to a declaration of intention that the corporation should be subject to State laws as to such domestic business. (Reagan *v.* Mercantile Trust Co., 154 U. S., 413; Smyth *v.* Ames, 169 U. S., 466, 519–522.)

Third. A tax upon the commercial operations of corporations engaged in interstate commerce is not a direct tax, for it is not a tax upon real or personal property, or upon the income derived from real or personal property. In Pollock *v.* Farmers' Loan and Trust Company (158 U. S., 601, 637) the majority of the court, while holding a tax on the income of realty and personalty a direct tax, are careful to state that "we do not mean to say that an act * * * might not lay excise taxes on business, privileges, employments, and vocations." In Nicol *v.* Ames (173 U. S., 509) the court held the stamp tax on sales made at an exchange or board of trade to be an indirect tax or excise, and not a direct tax on the property sold or on the members who engaged in the business, although the tax is measured by the value of the property sold. The same case held further that the tax was not objectionable for want of uniformity. It is true the court places its decision upon the ground that it is a tax upon the facilities offered at exchanges, and suggests that a tax upon a sale made in any place would be practically a tax upon property, because taking no notice of any kind of privilege or facility. But the privilege or facility offered to a corporation to engage in interstate commerce is of two kinds: First, the privilege to be a corporation, which is derived from the State and can not be taxed by the Federal Government, and, second, the privilege to engage in interstate commerce, which is beyond the control of the States and within the control of Congress, and may therefore be taxed by the power that confers or permits it. This offers, it seems to me, the basis of classification which is necessary to the laying of such a tax and brings the case into harmony with the leading cases on Federal taxation. (Veazie Bank *v.* Fenno, 8 Wall., 533; National Bank *v.* United States, 101 U. S. 1; Scholey *v.* Rew, 23 Wall., 331; Pollock *v.* Farmers' Loan and Trust Company, 157 U. S., 429, on rehearing 158 U. S., 601; Nicol *v.* Ames, 173 U. S., 509.)

Practical difficulties might arise in determining when an article sold by a corporation has become a part of interstate commerce, and so the transaction one subject to the privilege tax; but this difficulty is no greater than that now experienced in determining the same question where the right of a State to tax or regulate interstate commerce is questioned. (Brown *v.* Maryland, 12 Wheat., 419; Brown *v.* Houston, 114 U. S., 622; Cole *v.* Errol, 116 U. S., 517; Leisy *v.* Hardin, 135 U. S., 100; Pittsburg, etc., Co. *v.* Bates, 156 U. S., 577; State *v.* Engle, 34 N. J. L., 425.)

Probably Congress might, if it saw fit, act directly by prohibiting State corporations from engaging in interstate commerce. It must be remembered that a corporation has no rights outside of the State of its origin except such rights as the State into which it goes is pleased to grant to it, except that the State into which it goes can not deny it the right to engage in interstate commerce, because the State has no power over such commerce. In other words, it is not the strength of the corporation but the impotence of the State that enables the corporation to do such business within the territory of the State. But the National Government has precisely the power which is denied to the State. To it is committed the power to regulate interstate commerce. It therefore may do what the State may not do—forbid a corporation to engage in interstate commerce. It can not be that in the division of powers anything has been lost. If the State has lost, the nation has gained. If the corporation could have been prevented from entering another State before the Constitution was in effect, the power to prevent it must still be lodged somewhere, unless it has been expressly denied by the Constitution to both State and nation. No such denial of the power can be found in that document. Therefore, since the States have no longer the power to prevent a corporation from engaging in interstate commerce, the nation must have become the recipient of the power by the very terms of the provision that

impliedly denied it to the States. I am unable to see any escape, therefore, from the conclusion that Congress, under the power to regulate commerce among the States, may fix the terms on which corporations may conduct such business or may prohibit them from engaging in it at all. If this be not true, then a single State may create an artificial being that is not a citizen of any State (save merely for jurisdictional purposes) or of the United States, and which no other State or States nor yet the United States can control when it passes outside of the State of its origin. It is impossible to hold that one State can thus foist upon the other States and upon the United States an ungovernable creature of this sort, a legalized and irresponsible Frankenstein.

Whether, finally, we are to go on under the present system of dual control, or whether we are to have a system of exclusive State control, or whether we are to have a system of exclusive Federal control, seems to be within the province of Congress to decide. The present system rests upon a long development and commends itself to the conservative and the cautious. Whether it is satisfactory or can be made so is for the economists and statesmen to determine. The system of exclusive State control would doubtless lead to different results in different States, and while it might create some confusion and inconvenience, and even hardship, it would eventually furnish a basis for a comparative study of the differing experiments. Whether this loss in uniformity would overbalance the gain from diversity I do not pretend to say. I merely point out that such diversity would furnish the data for a later movement looking toward uniformity in case such a movement should later seem desirable. The system of exclusive Federal control would seem, perhaps, the logical outcome of the constitutional provision giving to Congress the power to regulate interstate commerce. I am even disposed to think that it will be the ultimate solution of the present problems. Whether the time is now ripe for it, or whether we need rather to proceed first with tentative experiments under one of the other two methods, is a question upon which we may well hear more before we make haste to decide.

LABOR.

The Industrial Commission has taken a large amount of testimony from many witnesses regarding all phases of labor problems. Representatives of nearly all the leading labor organizations have been heard, also employers and their representatives, factory inspectors, members of boards of arbitration and conciliation, and students of labor questions. Special reports have been made on labor legislation in this and other countries and on the condition of labor in certain industries.

The object of these inquiries has been to look upon the labor question as a part of the whole industrial question in all its phases, including its relation to agriculture, manufactures, mining and transportation, and including the influences on labor of foreign competition, domestic competition, immigration, technical and mechanical improvements, consolidations of business undertakings, and State and national legislation. The remarkable revolution in business methods and conditions of the past few years, showing itself in industrial combinations and the so-called community of interests, has been accompanied by an almost equally remarkable consolidation of labor interests through the growth and strengthening of labor organizations and the increase in labor legislation.

Whatever may be the ultimate outcome of this growth of organization on both sides, its first tendency has been to bring about a more definite separation of the two, and in many cases a distinct confronting of one by the other, each relying partly upon the strength of its organization and partly upon legislation and the courts. In several industries there is recorded especially in recent years an interesting and most important development of systems of conference and conciliation, by which the two interests, recognizing their dependence one upon the other and their need of harmonious action, have settled their differences in a peaceable way. To this phase of the development of labor and capital a large amount of attention has been given, and it marks one of the most hopeful phases of the labor question. The relative strength of employers and employees varies widely, however, in different industries, and shows itself in the differences in profits and wages; differences in the methods and medium of payment of wages; differences in the hours of labor, health, and safety of the working people, and in the relative importance of labor of women and children. Upon each of these particular phases of the labor question,

both labor organization and legislation have had important effects, but there are certain topics which belong primarily to legislation, such as employers' liability for accidents and the competition of convict and immigrant labor.

In the following pages is contained a review of the testimony on these subjects, which is scattered through the several volumes of the reports of the commission, of the special reports on labor matters prepared under the direction of the Commission and collateral information from investigations made through State and Federal bureaus of labor statistics, and Congressional investigations. This general review is followed by such conclusions and recommendations as the Commission is able to present for the consideration of the public and legislative bodies. In this part of the report are presented the review of facts and the recommendations specially applicable to labor employed in agriculture, transportation, manufactures, etc., although the general conditions of business in each of these branches are treated under their appropriate heads.

I.—GENERAL CONDITIONS AND PROBLEMS.

PROFITS AND WAGES.

The problem of profits and wages must be considered under two separate and wholly distinct aspects. The first question has to do with the share of the product of industry going to labor as compared with the share going to owners of capital, land, monopolies, etc. The second question—an entirely different one—is that which has to do with actual income and social well-being of the manual working classes. That the two problems are quite separate may be shown from the fact that, on the one hand, the share of the social product going to labor might be continually increasing from year to year and at the same time the actual income of the working people might be growing less, provided the aggregate product of society itself were decreasing. On the other hand, the actual income and social well-being of the working population might be on a steady increase and yet the share going to labor might be growing smaller and smaller, provided the aggregate production were increasing in greater ratio than the increase in the actual income of the working people.

UNCERTAINTY OF STATISTICS.

The solution of the first of these questions, that having to do with the share of the social product going to labor, is, perhaps, the most difficult and unsatisfactory of all statistical problems. It is one in which not only do existing statistics give little light, but they are actually misleading, or may be readily used with misleading results. The

simplest and most apparent fallacy, which is often circulated, is to the effect that since capital gets, say, 10 per cent upon its investment, therefore labor gets the remainder, viz, 90 per cent. In this statement two entirely separate problems have been confused. That capital receives 10 per cent on the investment is no indication of the proportion of the joint product which it receives. If the annual product is, for example, twice as great as the capital invested, then 10 per cent on the investment would be 5 per cent of the product; and on the other hand, if the annual product is one-half as much as the capital invested, then 10 per cent on the investment would be 20 per cent of the product. Only in case the annual product is exactly equal to the capital invested in its production would it be true that the rate of profit on the investment would be the same as the proportion of the product going to capital. For these reasons, it is impossible to say that, since the rate of interest on capital has declined, as is shown below, therefore the share of capital in the joint product has declined. It requires so much larger investments of capital now than formerly to produce a given output that a reduction in the rate of interest may be accompanied by an actual increase in the amount of annual product necessary to pay the interest on the largely increased aggregate of capital employed. The rate of interest on one dollar of capital tells nothing as to the share which the aggregate capital gets from the joint product of labor and capital.

Equally misleading are the conclusions frequently drawn from the census of the United States respecting the proportion of the total product which goes to capital and labor respectively. The census of 1890, for example, estimated the value of manufactured products for the entire United States at $9,372,000,000, and the aggregate wages in the same industries at $2,283,000,000, according to which it would appear that labor received 24.36 per cent of the joint product. But this inference is manifestly wrong, since the cost of material used in manufactures was more than half the value of the product, viz, $5,162,000,000, or 55.08 per cent. Miscellaneous expenses also were 6.73 per cent of the total product. The proper method of inquiry into the proportion of the product going to labor is that which separates out the cost of material and endeavors to discover what proportion of the net product is assigned to labor. If this is done, it appears that in 1890 the net product of all manufacturing industries was $4,211,000,000, and of this net product the total wages paid would be 54 per cent instead of 24 per cent. The above figure for wages, however, includes salaried employees, officers, superintendents, firm members, and clerks. The payment to wage-earners, properly speaking (but including some overseers and foremen on salary), was $1,891,228,321, or 44.9 per cent of the value of the net product of manufacturing industry.

The complete figures for the census of manufactures of 1900 have been secured, a trifle in advance of their general publication, through the courtesy of the chief of the Division of Manufactures. The net product of manufacturing industry in the United States by the Census of 1900 was $5,669,335,584; while the wages paid (not including any salaried officers) were $2,323,407,257, or 41 per cent of the net product. According to the Census of 1890, the amount paid for wages (including some salaried overseers and foremen whose extra compensation above that of wage-earners would not be sufficient to affect the percentage greatly) was equal to 44.9 per cent of the net product. There has been a decrease in the proportion of the total product going to wage-earners; while, as shown elsewhere (see page 492), the absolute amount going to the wage-working class has slightly decreased per capita during the decade. Wages in 1899, the year actually covered by the census figures, had not reached a point as high as in 1900 and 1901. In a period of rising prosperity wages ordinarily advanced less rapidly than prices and profit.

EARNINGS OF CAPITAL.

When we consider the entirely different problem of the increase or decrease of profits and wages over a period of years, we are met again not only by the defects of statistical inquiry, but by inherent difficulties of the problem. As regards the changes in the rates of interest and profits over a period of years, there are two entirely different questions to be considered. The first is the interest or profit received on disposable capital seeking investment in the open money markets. The second is the profits made by those enterprises which have an established existence. In the first case the rate of interest depends upon the opportunities for investment which have not yet been occupied and which may be much less profitable than those already in possession; while in the second case the rate of profit is determined for different investments by the different conditions surrounding each, especially the possession of good will, trade-marks, patent rights, and monopolies of various kinds. Monopoly privileges, for example, wherever they exist, become more and more valuable as population increases and the net returns are thereby augmented; but, at the same time, the rate of interest on disposable capital not protected by these privileges has continually declined.

As regards disposable capital, every statistical exhibit of value shows, during the past 30 or 40 years, this steady decline in the rate of interest. Here distinction should be made between call loans, loans on commercial paper, and loans on long-time securities. The interest on call loans is the interest on bankers' balances, and the rate depends largely on the temporary supply of legal tender and the con-

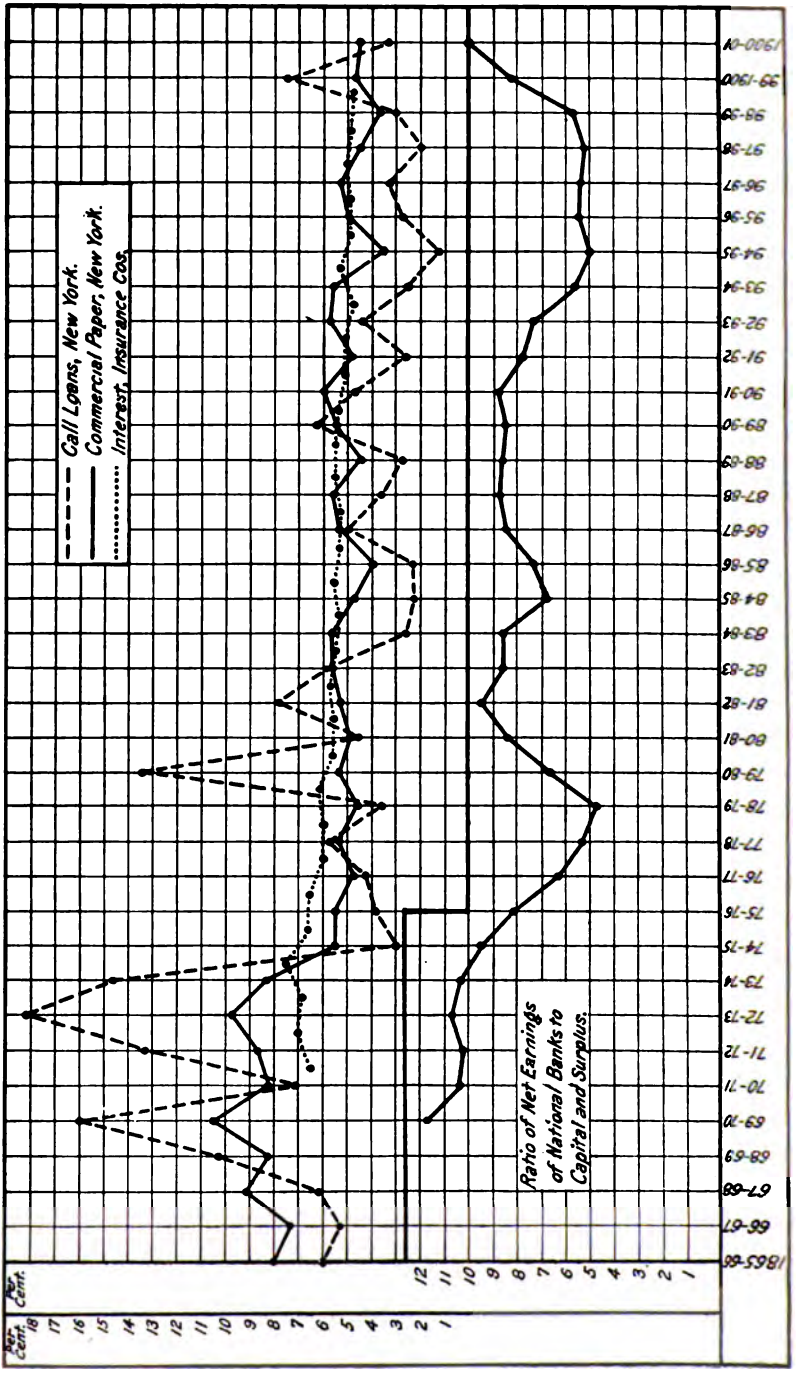
lition of the Federal Treasury, whereas the interest on commercial paper and the interest received on long-time investments depends upon the general business prosperity. The following table and statistical chart exhibit in an impressive way the general decline of interest on these classes of investments. The rates on call loans and commercial paper are shown for New York City from the year 1866 to 1901, and indicate the rapid decline immediately thereafter following the year 1873, and the more gradual decline, with fluctuations dependent upon current conditions of business prosperity and depression. More stable than the rate on commercial paper is that received by insurance companies, which is shown for 30 years. Here it appears that the average rate of interest for the years from 1871 to 1875 was 6.88 per cent, whereas for the 7 years from 1891 to 1897 it was 4.98 per cent.

Average annual rates of interest.

Year.	Call loans[1] (New York).	Commercial paper[1] (New York)	Insurance companies.		Ratio of net earnings of national banks to capital and surplus.[3]
			Companies reporting to New York insurance department.[2]	27 companies (Spectator Year-book).	
1866	6.06	8.13	.....	.....	.....
1867	5.40	7.38	.....	.....	.....
1868	6.11	9.12	.....	.....	.....
1869	10.25	8.22	.....	.....	.....
1870	16.02	10.46	.....	.....	11.8
1871	7.07	8.19	6.46	.....	10.4
1872	13.34	8.68	7.00	.....	10.2
1873	18.21	9.79	6.86	.....	10.7
1874	14.68	8.32	7.44	.....	10.3
1875	2.96	5.49	6.59	.....	9.5
1876	3.88	5.49	6.50	.....	8.1
1877	4.27	4.67	5.99	.....	6.3
1878	5.74	5.43	6.00	.....	5.3
1879	3.58	4.60	6.06	.....	4.8
1880	13.47	5.39	5.73	5.48	6.7
1881	4.80	4.98	5.60	5.51	8.4
1882	7.91	5.44	5.72	5.58	9.5
1883	5.90	5.72	5.61	5.52	8.6
1884	2.57	5.67	5.31	5.45	8.6
1885	2.24	4.82	5.46	5.51	6.9
1886	2.26	3.95	5.34	5.37	7.3
1887	5.04	5.35	5.34	5.44	8.5
1888	3.56	5.64	5.42	5.41	8.8
1889	2.78	4.51	5.36	5.23	8.7
1890	6.26	5.51	5.36	5.15	8.6
1891	4.78	6.03	5.13	5.28	8.9
1892	2.61	4.86	5.06	5.26	7.8
1893	4.41	5.78	4.84	5.06	7.4
1894	2.57	5.58	5.24	4.99	5.6
1895	1.34	3.45	4.85	4.99	5.0
1896	2.75	4.95	4.84	4.89	5.4
1897	3.27	5.21	4.98	4.84	5.4
1898	2.04	4.47	.....	4.85	5.2
1899	3.03	3.78	.....	4.79	5.8
1900	7.47	4.82	.....	.....	8.2
1901	3.30	4.50	.....	.....	10.0
1871–1875	.....	.....	6.88	.....	.....
1876–1880	.....	.....	6.00	.....	.....
1880–1884	.....	.....	.....	5.50	.....
1881–1885	.....	.....	5.54	.....	.....
1885–1889	.....	.....	.....	5.37	.....
1886–1890	.....	.....	5.37	.....	.....
1890–1894	.....	.....	.....	5.15	.....
1891–1897	.....	.....	4.98	.....	.....
1895–1899	.....	.....	.....	4.87	.....

[1] Year ending June 30. Compiled by John R. Commons.
[2] Calendar year. A review of Life Insurance, by John A. McCall, president New York Life Insurance Company.
[3] Year ending March 1. Reports Comptroller of the Currency.

Rates of interest and profit.



The rates of interest quoted are, as already stated, those received on disposable capital which is open to competition and does not possess any special privileges or advantages protecting it from competitors. When it is attempted to discover the rate of profit received on capital invested in business, an insurmountable difficulty is presented in all industries except one, namely, national banks. This difficulty consists in the fact that it is impossible to ascertain the actual amount of capital invested, since, both in the census returns and in all statistical inquiry, capital is understood to include not simply the cash investment but also such estimated items as good will, trade-marks, franchises, monopoly values; and when the market value of these divergent elements is taken, we have something either more or less than the actual capital invested. The matter of depreciation, also, is one as to which the estimates are widely divergent. On the other hand, the national banks of the United States are required to report each year, through the Comptroller of the Currency, the actual amount of capital, surplus, dividends, and net earnings, without any reference whatever to the market value of good will or franchises, and, moreover, the matter of depreciation does not enter. In this business, therefore, the capital and surplus of the banks represent accurately the investment of the shareholders, and the ratio of net earnings to the sum of these two items is the actual rate of profit on capital. The preceding table contains a column from the reports of the Comptroller of the Currency, also projected on the accompanying chart, showing the ratio of net earnings to capital and surplus from 1870 to 1901. It will be seen that these earnings fluctuate much more widely than the rate of interest on commercial paper or on insurance loans, and that they exhibit quite accurately the alternations of prosperity and depression as affecting the banking business. The net earnings, which in 1870 were 11.8 per cent, fell to 4.8 per cent in 1879, rose to 9.5 per cent in 1882, and, with a decline in 1884 and a recovery in 1886, fell again in 1891 to 5 per cent, and have since risen to 10 per cent. As already stated, there is no other industry or business in the United States for which over a period of years it is possible to show the amount of profits as can be done in the case of the national banks. While the banking business fluctuates with the general conditions of industry, it is, of course, impossible to draw conclusions from the history of this one business which shall apply to others respecting the rate of profits.

WAGES.

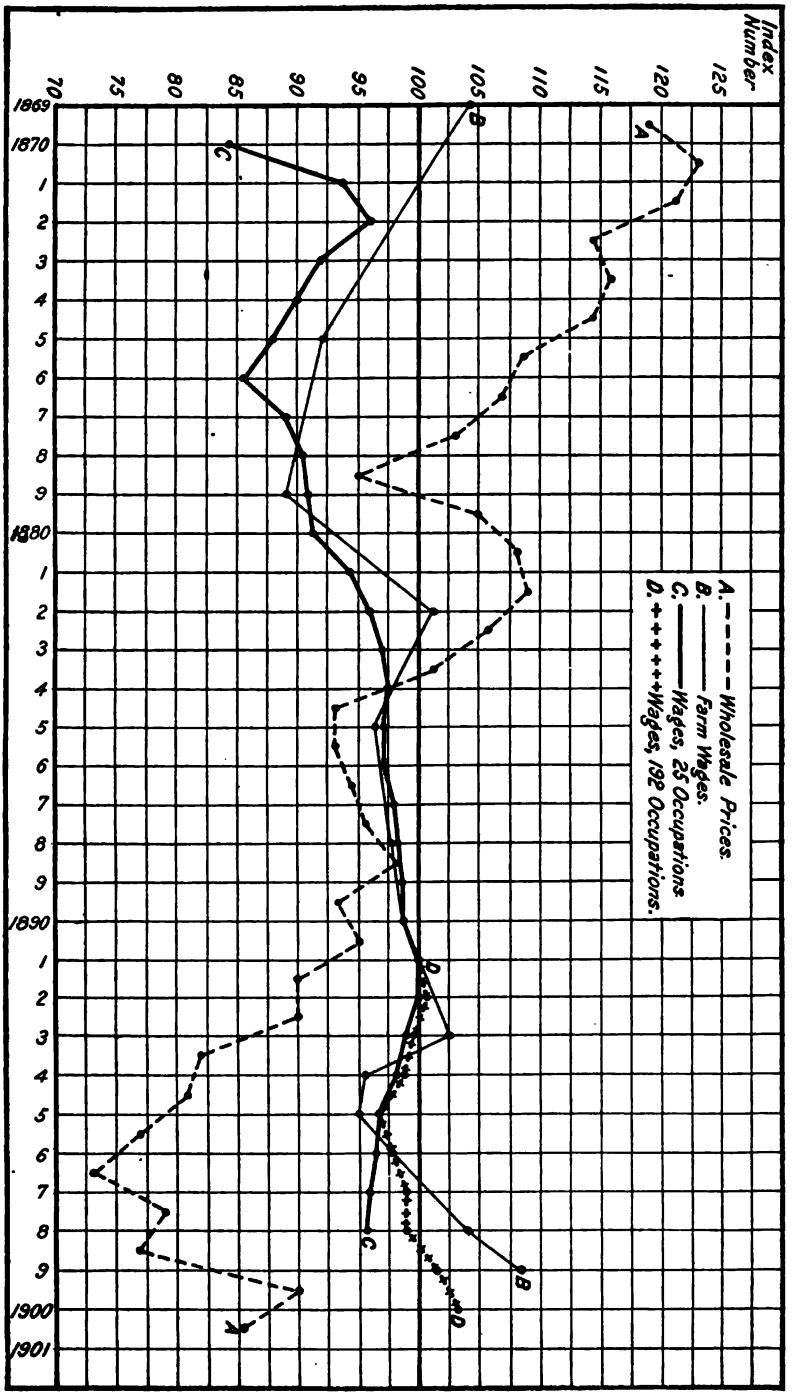
The foregoing has to do with the earnings of capital. In considering the changes which have occurred in recent years in the earnings of labor there are two factors to be taken into account, namely, money wages and cost of living.

Relative movement of wages and wholesale prices.

Year.	Prices (in gold).[1]	Prices.[2]	25 occupations, wages gold (wages for 1891 being 100).[3]	Wages, 192 occupations.[4]	Wages of farm labor (in gold) per month without board.[5]
1869	.....	.....	.....	.....	104.8
1870	119.0	.....	84.64	.....	.....
1871	122.9	.....	94.00	.....	.....
1872	121.4	.....	96.26	.....	.....
1873	114.5	.....	92.13	.....	.....
1874	116.6	.....	90.46	.....	.....
1875	114.6	.....	88.11	.....	92.9
1876	108.7	.....	85.65	.....	.....
1877	107.0	.....	88.21	.....	.....
1878	103.2	.....	90.66	.....	.....
1879	95.0	.....	91.12	.....	88.3
1880	104.9	.....	91.94	.....	.....
1881	108.4	.....	94.59	.....	.....
1882	109.1	.....	96.16	.....	101.7
1883	106.6	.....	97.05	.....	.....
1884	102.6	.....	97.88	.....	.....
1885	98.3	.....	97.15	.....	96.6
1886	98.4	.....	97.15	.....	.....
1887	94.5	.....	97.98	.....	.....
1888	96.2	.....	98.52	.....	98.0
1889	98.5	.....	98.82	.....	.....
1890	98.7	.....	99.31	.....	98.6
1891	94.4	95	100.00	100.00	100.0
1892	.....	90	100.59	100.50	.....
1893	.....	90	99.94	99.32	102.6
1894	.....	82	97.98	98.06	96.4
1895	.....	81	97.19	97.88	96.1
1896	.....	77	96.60	97.98	.....
1897	.....	78	96.11	98.96	.....
1898	.....	79	95.62	98.79	104.2
1899	.....	77	.....	101.54	108.7
1900	.....	90	.....	108.43	.....
1901	.....	88	.....	.....	.....

[1] Jan. 1. (Aldrich Report, Senate Rep., 52d Cong., 2d sess., Pt. I, p. 100.)
[2] Year ending June 30. (Bureau of Economic Research.)
[3] Year ending Dec. 31. (Bulletin, Department of Labor, Sept., 1898.)
[4] Year ending Dec. 31. (Bulletin, Department of Labor, July, 1900.)
[5] Year ending Dec. 31. (Dept. of Agr. Bulletin 22, Mis. Series, 1901.)

The most comprehensive statistics available at the present time for survey of the daily rates of wages over a period of years are those compiled by the United States Department of Labor and the United States Department of Agriculture. The compilations of the Department of Labor are for selected occupations, and do not cover the entire field of labor, whereas the compilations of the Department of Agriculture present the average wages of farm laborers throughout the entire United States. The accompanying table and chart are designed to show the movements of wages as presented by these two authorities. The compilations of the Department of Labor for the years 1870 to 1898 include 25 occupations, representing building trades, machine trades, and the higher grades of railroad employees,



Movement of wages and wholesale prices, 1869–1901.

together with street laborers and teamsters. Another compilation of the Department of Labor, covering the years 1891–1900, includes 192 occupations. Each of these series of wage statistics has been compiled in the accompanying table, and has been graphically presented in the accompanying chart, by taking the average wages of the year 1891 as a standard, equivalent to 100, and then computing the wages of other years as percentages of this standard year. By this method it can be seen that wages in the 25 selected occupations touched the lowest point in 1876, when they stood at 85.5 per cent of the figure for 1891, and that from that time until 1893 there was a steady increase, followed by a decline, until 1898, when they stood at 95.62 per cent of the figure for 1891. At the same time, the wages of the 192 occupations for the years 1891 to 1898 show a close parallel with those of the 25 selected occupations, and from 1898 to 1900 they rose 4.6 per cent.

The wages of farm laborers, compiled by the Department of Agriculture, do not include successive years, but only occasional selected years. These indicate that the lowest point was reached in 1879, after which a rapid rise occurred in 1882, and then slight fluctuations until 1895, since which time there has been an increase of 14.4 per cent to the year 1899.

It is significant to notice the movement of daily rates of wages, compared with the movement of wholesale prices of products. (See chart and table.) In general there is conformity between the two, depending largely upon the conditions of prosperity and depression, but the fluctuations of prices are more extreme and sudden than those of wages. Wages follow at a considerable interval the rise and fall of prices. From this it follows that when prices rise as a result of prosperity, a rise caused in the cost of living, and therefore a considerable portion of the succeeding rise in wages is counteracted, and when prices fall as a result of depression the laborer does not enjoy all the fruits of low prices on account of the resulting lack of employment.

Regarding the daily rates of wages, as shown above, it must be observed that there is extreme difficulty in identifying an occupation through a period of years as extensive as that from 1870 to 1900. During this period there have been revolutionary changes in industry and inventions of new machinery, displacing large classes of laborers, and the name of an occupation in 1870 often covers an entirely different kind of work in 1900. The displacement by machinery has had the effect of raising the wages of the more highly skilled and indispensable laborers, and, on the other hand, of substituting a larger mass of unskilled laborers who attend the machines. It is comparatively easy to follow through these various changes the wages of the higher skilled laborers, since the names and character of work remain much the same; but the unskilled laborer who takes the place of the earlier skilled workman receives an entirely different designation, and often fails even to be included in comparisons covering a period of years.

Again, it must be noted that changes in the daily rates of wages are by no means a criterion of changes in the condition of the workers. More important than daily rates are the annual earnings. Annual earnings depend both on the daily rate and on the amount of employment through the year. This aspect of the labor question has not heretofore received the attention which its importance deserves. Within the past four or five years, however, statistical bureaus and labor organizations have paid some attention to it. Reports made by the Pennsylvania bureau of industrial statistics show that in the years 1894 and 1896, in the 47 industries of that State investigated, the average number of days worked was 276; in 1893, the average number of days was 268; in 1898, 298; in other words, in 1896 labor was employed in these 47 industries 90.1 per cent of the possible working days, and in 1898, 97.3 per cent of the possible working days (313). Wide variations occur for different occupations. In anthracite coal, in 1892, the workmen were employed 67.5 per cent of the possible working days; in 1896, 56.5 per cent; in 1897, 46.8 per cent, and in 1898, 48.5 per cent. In bituminous coal the number of days employed ranges from 61.3 in 1896 to 68.1 in 1892 and 1898.

Reports made to the New York bureau of labor statistics from 1897 to 1901 show, for members of labor organizations, that the average loss of time by unemployment by quarterly periods ranges from 9 per cent of the possible working time in the third quarter of 1899 to 25.7 per cent in the first quarter of 1897. (See p. 755, following.) These investigations show the great importance of taking into account not merely the daily rates of wages but the annual earnings.

Again, not even do annual earnings represent accurately the changing conditions of wage-earners. Perhaps the most significant feature of modern industry is the increasing intensity of exertion, owing to the introduction of machinery and minute division of labor. Where formerly the workingman could change from one operation to another, he now is limited to a very small operation in a large series. He acquires intense speed, and the force of competition compels employers to select only those who excel in physical vigor. To this is added the fact that labor unions have quite generally been compelled to remove the restrictions, which often formerly existed, on the amount of work a man shall be permitted to turn out. The result is that the trade life of the workingman has been reduced in many industries. The superintendent of the free employment bureau of New York states that—

> The average woman who earns her living as a domestic is commercially dead after she is 45 years of age. There is no place for a man that is 50 years of age, if he is a common laborer, if he shows his age.[1]

A general complaint comes from all trade unions and from workers in all occupations respecting this shortening of trade life. Plainly, if

[1] Reports Industrial Commission, Vol. XV, p. 223.

the increased exertion of the wage-earner shortens his period of earnings, there ought to be a corresponding rise in the daily rates of wages in order that he may retain throughout his life his original standard of living.

The foregoing wage statistics are compiled mainly from those occupations which are found in growing cities. Here the increasing expense for necessities of existence, especially rents and car fare, consume a large part of the increased earnings. There is less opportunity for those collateral earnings which in earlier days the workingman could secure from his small plot of ground and the vegetables and domestic animals which he could care for outside of trade hours. Money wages in cities must be considerably higher than money wages in the country, in order that the same standard of living may be maintained; and wages in growing cities must rise much more rapidly than country or village wages, in order that the condition of the workingmen may run a parallel course of improvement.

At the same time the decrease in the cost of many of the commodities most used by the working classes is a factor which has tended to make their actual, as distinguished from money wages, greater.

Finally, there is a marked difference between the earnings of organized workmen and those unorganized. The foregoing statistics do not include such trades as those of clothing workers and miners, where immigration and lack of organization have in the past 30 years caused serious depression in earnings. The influence of organization is nowhere more strongly exhibited than in the case of bituminous coal workers. In Illinois their wages declined sharply in the years preceding 1884. They declined again some 17 per cent from 1890 to 1896, but in 1897, when the first wide-reaching and strong organization of miners was effected, their wages were increased 30 to 40 per cent. This important increase should be compared with the very moderate increase of 4.6 per cent from 1898 to 1901 in the daily rates of wages of the 192 occupations cited above from the reports of the Department of Labor. In the clothing trade a similar condition has existed. Only in certain occupations of that trade, such as those of cutters and special-order workers, where organization has been effected, have wages remained constant or been increased. These examples indicate that the most important factor in promoting the progress of wage-earners is their ability to effect and maintain an organization.

Taking into account these observations, it must be concluded that the daily rate of wages is not a safe measure of the changing conditione of labor, and that in a discussion of the progress of the working population account must be taken of the amount of annual employment, depending on general conditions of prosperity and depression, the life earnings of the worker, depending upon the increasing intensity of exertion and overwork, and the increased necessary expenses of city life.

PAYMENT OF WAGES.

TIME AND PIECE PAYMENT.

The method of payment of wages is often a matter of equal importance with that of the amount paid. The nominal wages may be far from the actual value received by the workingman, if the methods by which they are paid are such as to lend themselves to oppressive conditions. The simplest form of payment, and that generally applicable, is payment by the time employed, usually by the week or day. Seeing that workers differ much more widely in the quantity and quality of work accomplished in a given time, than they do in wages received, and that the same worker at different times performs different quantities of work, it, of course, follows that there are wide varieties in the rates of pay per unit of effort. The fact, also, that competition compels the employer to reduce his costs in all possible ways, drives him to secure, if possible, as time goes on, more work for the same money, or the same work for less money. The necessary condition of this object is accurate records of costs, based on the product of each workingman, the time employed, and the pay. Accurate cost-taking is one of the principal business improvements which have contributed to the progress of American industries. In this way a standard is set up by which to judge the amount of work that should naturally be expected from a given position. But, in the case of payment by the time employed, there is always uncertainty regarding the amount of work which the employee will produce. Time work, in order to be reduced to the lowest basis of cost, requires constant supervision. The average man, whether workman or professional man, is eager to earn as much as possible with as much economy of strength as possible. Hence the progress of American industry has been characterized quite largely by the substitution of piece payments for time payments. Wherever it has been possible, through a minute division of labor, to standardize the product, the piece system is applicable. It does not apply to artistic and diversified work, where quality is desired but, operating upon the individual ambition of each workman, with a goal set before him each day, the piece system is unquestionably adapted to draw out his entire energies. It is quite generally maintained by employers that workingmen paid by the piece produce from 10 to 25 or 30 per cent more of a given product in a given time than when paid by the time. However, from the standpoint of the employer, the tendency of men paid by the piece to scamp the work is often found to be a disadvantage. On this account many large employers, having tried the piece system for a time, have abandoned it and returned to time payments. This they found to be necessary in order to maintain a high standard in the quality of their output. The piece system, for

the time being, enabled them to measure up the possible energies of their employees, and when once they had in this way touched bottom and established a standard, they were able thenceforth to apply this standard to the time system.

From the standpoint of the workingman the piece system is usually considered the greatest disadvantage. It unquestionably often leads to over-exertion, which exhausts the body and mind, and shortens the trade life of the worker. Various witnesses before the Industrial Commission have emphasized this feature. Especially, however, is the piece system considered an injury because it is likely to result in repeated reductions of the price per piece. The employer judges his entire staff by the speed of the most rapid, and consequently, by showing up the earnings of his best men, is able to present a strong argument for reduction along the entire line. It is unquestionably true that there are in all occupations wide ranges of ability among men employed on the same work, and those who acquire exceptional speed are few. Their names and records are well-known throughout the trade or locality. When this minority is taken as a standard and the wages of all reduced proportionally, the piece system undoubtedly becomes not merely a means of greater economy, but also a means of oppression and exploitation.

Again, the piece system is often the means of keeping idle an oversupply of employees. A larger number than is necessary to do the work is kept on the rolls. There are, however, various classes of workers, like the shoe workers and the weavers, who occasionally demand the piece system in place of the time system. These are occupations where, by speeding up the machinery, a greater output can be obtained, and if the price paid is not based on the piece, the worker does not share in the advantage of the increased speed.

It must be noted, however, that the time system also under certain conditions may become a system of driving and overexertion. This is true in those unorganized trades, like the clothing trade, or trades where women and children are employed, in which individual bargains are made. Since in such trades there is no minimum scale of wages, the high standard of output of the more rapid worker is applied to those who are slower, and the time wages are reduced accordingly. The time system must necessarily, in the long run, under economical management, become practically a piece system. This is true even though it does not necessarily become a task system, where the worker is required, as often happens in the clothing trade, to turn out a given quantity of goods for the standard wages in a given time.

While it is true that the workingman is deeply interested in the method of payment, it is also true that the employer, being responsible for the business, should have his choice of methods. If by adopt-

ing the piece system he produces an inferior quality of product at less cost, it does not behoove the employee to criticise upon that ground, since it is the employer, and not the employee, who manages the business and takes his chances of sale. On the other hand, if the employer desires a superior quality and can get it only by time payment, he should be free to adopt that method. But while the employer should have his choice of method, it does not follow that he should be able to use it as a means of depressing wages.

The social service which the employers as a class contribute to society is accomplished when they increase the quantity of production, but not when they reduce wages. Hence the workingman, if he cedes to the employer the right to manage his own business as he sees fit, has, on the other hand, a right to demand that a minimum be set to the rate of wages, below which under no conditions shall they be depressed, and that a maximum be set to the hours of labor beyond which his exertions shall not be prolonged. This, however, means that the same minimum and maximum shall apply to all competitors. This can be accomplished either by legislation or by a trade union. While legislation fixing the maximum hours of labor may be applicable in certain cases, as will be considered in a succeeding section, legislation fixing a minimum scale of wages is obviously impracticable. There does not appear to be any possible device whereby a minimum can be established by law in such a way as to avoid evasion. The workingman who is willing to work for less than the minimum can readily agree to refund to the employer a portion of his pay. As far as American labor is concerned, there can be but one method of establishing such a minimum, namely, that of labor organization. A union like that of the Mine Workers, covering the entire competitive field, establishes a uniform scale for day labor, and an equalizing scale for piece payments, and all competitors are thereby placed upon a level.

The minimum day wage may be applied both to the time system and to the piece system. In the latter case it is usually called the "premium" system. According to this system, the minimum wage per day, is set, but the employer, having figured out the average output of a day's work, offers a bonus for each piece produced above the average. Thus, if 30 pieces are produced on an average where a minimum of $3 a day is paid, the cost to the employer would be 10 cents apiece, but if 32 pieces be produced, the employer agrees to divide the profit and to pay 5 cents extra on each piece, in this case making the extra wages 10 cents a day and the added profit of the employer also 10 cents a day. It will be seen that the premium system does not offer the incentive to extra exertion which the straight piece system offers, since on that portion of the output above the standard amount, only one-half the piece price is paid.

TIME OF PAYMENT.

It is generally accepted that the workingman shall receive pay at the end of a certain period of work; in other words, he advances to his employer a day's work, or a week's work, or a month's work, as the case may be, and at the end of the time receives his pay. The longer the interval between payments, therefore, the larger is the loan which the workingman makes to his employer without interest. Various States have attempted to regulate the time of payment, and have adopted weekly or fortnightly payment laws applying to all employers of labor, while in other States the laws apply only to corporations or special industries. The first class of laws have usually been held unconstitutional by the courts, except in Massachusetts. Thus they have been held unconstitutional in Pennsylvania, Illinois, Missouri, West Virginia, and other important States.[1] Laws applying to corporations or special industries have more usually been upheld by the courts.

The objection to monthly payment, or to payment at intervals greater than one week, is the dependent condition to which it reduces the employee, who is thereby compelled to subsist on credit, with the accompanying heavy increase in the cost of his living. While the laws regarding time of payment have been held unconstitutional or have been ignored without penalty, yet in the case of strong organizations of labor, weekly and fortnightly payments are usually secured. Here as may be frequently noticed, the trade union enters as a means of regulation where the State legislature fails.

CASH PAYMENTS.

Undoubtedly the most bitter complaint advanced by working people regarding methods of payment is that which applies to company stores and company tenements. Where the employer owns the store from which his employees are required to purchase their food, clothing, and supplies, or owns the houses in which they are required to reside, wages are often paid in cash only to the extent of such balances as may remain to the credit of the employee after deducting his charges at the store or for rent. Even when wages are paid in cash, the employees are sometimes virtually compelled to deal at stores or to live in houses owned or controlled by the employer. This method of truck payment instead of cash payment is naturally dependent in part upon the local circumstances of the business. Enterprises like those of mining, where the place of work is remote from business centers, are often unable to secure the needed help unless they construct houses for shelter and provide stores for supplies. As the locality grows in

[1] Reports Industrial Commission, Vol. V, p. 55.

population and it becomes profitable for retail dealers to locate, the necessity for the company store or tenement is diminished.

The existence of company stores is often an indication that the working people employed have made little progress from the condition of serfdom. They chiefly exist in sections where the laborers are ignorant and largely of foreign extraction, unacquainted with American conditions and methods of labor organization.

Plainly, if the employer runs his store to supply goods at cost plus the mere expense of handling, his store becomes a benefit to the employee; but this is seldom the case. The temptation is entirely too strong, especially in times of depression, to recoup losses in the productive branch of the business from profits on the goods sold or the tenements rented to employees. In many company stores in the South it is claimed that goods are sold for not less than 100 per cent profit. This cuts the laborer's wages in two.[1] In certain mining sections of Pennsylvania the prices at company stores are 25 to 40 per cent more than elsewhere.[2]

Company stores and tenements are objected to even where the prices are not excessive, on the ground that they limit the choice of the employee, and, more than anything else, that their existence contains the unwritten threat of discharge for the employee who fails to trade at the company store or occupy the company tenement. This implied threat is a powerful obstacle to the organization of labor and the inauguration of a strike.

Legislation against company stores and company tenements has been enacted in several States, but has in several cases been held unconstitutional.[3] Even where such legislation is not declared unconstitutional, there is an inherent difficulty in enforcing the penalties of the law upon the employer, since prosecution must usually be instituted by the employee or by some one in his behalf. In either case the certainty of discharge makes him anxious to avoid the prosecution. Consequently almost the only cases where the law is enforced are in those industries where a strong labor organization has taken up the issue; and even then the result is not usually accomplished by a legal prosecution, but by the ordinary direct influence with the union.

SCREEN LAWS IN COAL MINING.

Most of the coal-mining States have passed statutes providing generally for the fair weighing of coal at mines. It has often also been enacted that the coal must be weighed and credited to miners in determining the amount of wages due them, before it is screened. The

[1] Reports Industrial Commission, Vol. VII, pp. 779.
[2] Ibid., pp. 46, 47.
[3] Ibid., Vol. V, pp. 59–61.

latter statute has been held unconstitutional in Illinois, West Virginia, and Colorado, but sustained as to corporations in West Virginia.[1] In Illinois, however, the United Mine Workers have been able to impose this regulation, through their organization, upon the operators. While mine operators often maintain that payment for coal before screening—the "run of mine system"—tends to cause the miners to be careless and to break up the coal unduly; yet opportunities for unfair methods of screening, by which the workman fails to receive proper pay for what he has produced, make it desirable in the interests of justice that payment should be on the basis of unscreened coal.

THE SWEATING SYSTEM.

In contrast with the growth of large establishments, which is so conspicuous a feature of recent economic development, it must be observed that in certain industries the small shop retains its hold. One phase of this remarkable exception to the general trend of industrial organization is found in the so-called sweating system in the manufacture of clothing, where, in certain divisions of the trade, the larger establishments have been driven out of business by smaller establishments. This supremacy of the smaller establishments is closely connected with the fact that in them are found the worst conditions of labor—low wages, long hours, and oppressive methods of payment.

The sweating system in the clothing trade, from the standpoint of organization of industry, consists in the separation of the manufacturing from the marketing of the product. The wholesale clothing manufacturer is really a wholesale merchant, and the manufacturing proper is conducted by independent contractors in their own small establishments. While in certain lines of clothing there is a tendency toward the growth of large merchandising, owing to the greater economies in managing and sustaining a staff of salesmen and in the larger purchases of cloth, yet on the manufacturer's side there is an advantage in the small establishment. One reason why the small establishment survives is the wide variety of garments manufactured. Ready-made clothing is now produced in factories for men, women, and children, of all styles and grades. Hence there is an economy if each establishment specializes on certain lines; and it is usually the case that one contractor devotes his entire attention to a certain grade of coats, another to a certain grade of vests, and so on. The facts, too, that the business depends on the season, that the capital invested must lie idle during several months of the year, and that the factory must usually be located in a large city, where rents are very high, make it to the advantage of the merchant to throw the expenses of these items

[1] Reports Industrial Commission, Vol. V, p. 63.

upon the contractor. Such articles as overalls, army clothing, and cheaper garments can be made on a large scale in successful competition with the smaller shops, but the smaller shops hold their own in the greater portion of clothing manufacture.

The principal reason, however, for the existence of the small shop is the oversupply of cheap labor, brought about through immigration, and the pressure of this class of laborers to find employment under whatever conditions may be imposed. This class of labor can best be secured through the personal interest of a contractor rather than that of a foreman. The contractor lives in the neighborhood of the immigrants, is familiar with their languages, and is able to secure them in times of business activity. His solicitations are more personal than those of large employers.

On account of these conditions, the manufacturers, instead of employing foremen to supervise the manufacture of their garments, give their work out to contractors. The contractors, requiring but little capital, spring up in large numbers, and their competition with one another drives the contract price to the lowest possible limit. Being on intimate terms with their employees, and in many cases even less prosperous than the better grade of workmen, they act as go-betweens, and when the merchant's price for a garment is lowered, they can persuade their workmen to take a reduction in pay or to agree to work longer hours. In this way a continual higgling is conducted; and since in the absence of strong labor organization no established scale of wages and no regular hours of labor exist, there is no protection for the contractor or the sweat-shop worker.

Originally the sweating system was a system of working at home, whither the tailor with his family and a few helpers carried the goods which they were to prepare for the merchant. The home work or tenement-house work of former years has largely disappeared, especially for the manufacture of ready-made garments, owing particularly to legislation directed against it in the years following the influx of immigrants fifteen years and more ago. At the same time, also, the progress of the industry has demonstrated the greater economy of separate shops, where a larger number can be employed upon the same garment, with a more minute division of labor. These small shops have taken the place of the tenements in the manufacture of the bulk of ready-made clothing. Many of them are in the rear of tenements and sometimes in portions of tenements, though not in the living rooms. There is, however, one remnant of the original home work which still largely clings to the tenement, namely, the so-called "finishing" on coats and trousers, and also certain kinds of light work by which the women of the house earn "pin money." While the greater portion of the work on ready-made clothing has been taken out of the tenement house, yet, since the "finishing" of the garments is still

largely done at home, it is evident that, as far as contagious and infectious diseases are concerned, tenement-house work is fully as dangerous to the public as it was in earlier days.

The main objection brought by clothing manufacturers against the prohibition of home work and the contractor's sweat shop is the necessity of working long hours during the busy seasons. The factory system, under the customary factory laws, would restrict employment to 58 or 60 hours a week, whereas when working at home or in sweat shops employment during the busy season can extend to 12 or 14 hours a day, and even longer in individual cases, since the law does not apply to home workers, and is difficult of enforcement in the sweat shops. This seasonal character of the work is largely due to the changes in fashions, which, especially in women's clothing, lead dealers to withhold orders to the last moment in order to protect themselves against losses on out-of-date goods. This objection, in view of existing legislation regulating hours in this industry, lacks force. The restriction on the number of hours of daily employment, where adopted, compels the manufacturer to extend employment throughout a larger number of months in the year and to make employment more regular. This depends upon two conditions—the willingness of the consumer of custom-made goods to order his clothing in advance, and the willingness of the manufacturer and merchant to "stock up" on goods. The education of the consumer in this industry is certainly as practicable as in other industries. When the consumer once discovers that he can not postpone his purchases until the very last minute, but must take into account the conditions of employees who are prohibited from an accumulation of overwork in a busy season, it is naturally to be expected that he will acquire the habit of giving his orders earlier. As regards the manufacturer, there is nothing peculiar in this trade which makes it convenient to delay manufacture until orders are at hand, except the presence of an oversupply of cheap, unorganized, immigrant labor. With such a supply at hand, both consumer and manufacturer feel at liberty to concentrate their work in five or six months of the year, whereas if they were met by the necessity of spreading it out over eight or ten months they would discover methods for so doing. Such a revolution doubtless could not be brought about by arbitrary and prohibitive legislation, but the strict enforcement and perfection of laws restricting tenement-house work and restricting the hours in sweat shops, and also such legislation as would make the manufacturer responsible for the wages promised by his contractors, would gradually make it more and more unprofitable to depend upon home work and sweat shops, and would lead to a substitution of the factory system under the management of the manufacturer himself.

SWEAT-SHOP LEGISLATION.

In the manufacture of custom-made clothing, on the other hand, the work still continues to be carried on in the homes of the journeymen tailors, where the entire garment is made by the tailor and his one or two helpers. The garments made for all classes of people, from the most expensive to the cheapest, are thus subject to the contagion and disease of tenement-house work. The only exception is found in a few isolated establishments which make a point of advertising special-order garments as made on their own premises. While it is perhaps true that the efficiency of boards of health in the large clothing centers is greater than it was in earlier days, yet the isolation and seclusion of thousands of home workers make sanitary inspection always uncertain.

The so-called sweat-shop legislation of eight or ten American States is legislation directed against tenement-house work. The main object in this legislation is the protection of consumers from the contagious diseases carried in the garments manufactured in insanitary homes. Incidentally, this legislation has been of benefit to the workers themselves. Home work has, from the beginning of the factory system, been a source of complaint on the part of the working people. Labor organizations find it almost impossible to organize those classes who are employed at home. They are isolated, unacquainted with the market for labor, and deprived of those opportunities for conference and joint action which factory operatives enjoy. The hours of labor at home are unlimited, and the competition of one home worker with another, through the contractor, depresses wages. Moreover, the crowding of the living rooms with machines and clothing, which converts the home into a workshop, reduces the standard of living and lessens the eagerness to secure better conditions. For these reasons representatives of the working people have quite generally demanded the entire abolition of home work; but in no State has legislation been carried to this extent. The law of New York, enacted in 1884, prohibiting tenement-house work in the manufacture of cigars, was declared unconstitutional, as interfering with the freedom of the home, and as not having the justification of being a police measure for the protection of the health of the public. In view of this decision, the States that have legislated upon the subject have substituted a system of licensing home work, and have provided that the licenses should be granted only in cases where cleanliness and sanitary conditions were maintained. This license places wide discretion in the hands of the inspector. In the ordinary prosecution of violations of the various factory laws, the inspector is required to bring the violator into court, and to prove to the satisfaction of the judge that the law has been violated. But where the license provision exists, the inspector enforces the punishment directly upon the violator, by

withdrawing the license; and the remedy in this case is far more effective than any penalty imposed in court, since it takes from the violator the opportunity to earn a living. The license law does not apply to all factories, except in the State of Pennsylvania; but it does apply to such manufacturers as send out work to be done at night by their employees.

The enforcement of legislation of this character depends more directly upon the quality of the inspector, his integrity, and his freedom from outside influence, than upon the strictness of the law itself. Legislation in Massachusetts is less advanced than that in New York and other States, and yet the restrictions upon tenement-house work are more effective in that State, owing to the continuous service and expert qualities of the inspectors, and to the civil-service laws which protect them in their offices. While, therefore, uniformity of legislation is desirable in order that the less progressive States may not have an advantage over those whose legislation is stricter in the protection of the public and of the working people, yet it is even more desirable that the administrative machinery be toned up to the highest point of effectiveness under the existing laws. Doubtless the enforcement of this class of legislation in the city of New York is more difficult and requires a much larger staff of competent inspectors than in any other city of the country, because of the presence in that city of large numbers of immigrants and the severity of competition in the clothing trade; yet other States with advanced legislation and strict administration of sweat-shop laws can not be expected quietly to content themselves when they see their clothing trade going to that city to take advantage of the lax administration of its sweat-shop laws. In Chicago and St. Louis there is an actual deficiency in the laws, in that they do not give the inspector those powers found necessary in the model laws of New York, Pennsylvania, and Massachusetts.

In addition to the formal enforcement of the laws by the factory inspectors, it is desirable that provision should be made for what may be designated automatic enforcement. This can be brought about simply through publicity, since the merchant finds his goods unsalable if the consumer knows that they were made in insanitary surroundings. Publicity can be secured by requiring the manufacturer to furnish the factory inspector with a complete list of all his contractors and home workers, and then making this list public property, open to the inspection of any citizen. Such lists are already required by the laws of Massachusetts, New York, and other States, but the public does not have that free access to them which is necessary if they are to be an effective means of publicity; neither are the inspectors sufficiently careful in keeping the lists corrected to date.

RESPONSIBILITY OF THE MANUFACTURERS.

The sweating system as it exists in the larger cities at the present time is a direct result of the lack of organization and the competition of the clothing workers, due to immigration and to their divergent nationalities. Organizations which have been created have rapidly disintegrated. The clothing workers of New York have recently effected an organization in which, for the first time on a large scale, they have made a demand upon the manufacturers that the contract system be abolished and that all work be done in shops under the direct control of the manufacturer. The object of this demand is to do away with the severe competition of contractors for work, and to provide that the contractor may be placed in a closer personal relation with the manufacturer, similar to that of a foreman. The practical device by which this is sought to be effected is the requirement that the manufacturer shall become responsible for the wages paid by his contractors, the scale of wages being set by the union. It is held by the garment workers that, when once the employer is held responsible for the wages, it will no longer be profitable for him to give his work out to contractors.

An analogous situation exists in the enforcement of the laws against tenement-house work. These laws at the present time do not impose a penalty upon the manufacturer; they are directed simply against the home worker or the contractor. The penalty of $3 to $20 imposed in different States is indeed a high penalty when applied to the home worker, and there are very few prosecutions of such cases. The penalty, however, is not as heavy upon the contractor, and would be insignificant upon the manufacturer. But the manufacturer is influenced by another consideration more important than the penalty, namely, the injury to the reputation of his house. The most effective improvement in the legislation against tenement-house work would be that which should include the manufacturer and should hold him responsible for violations of law by his working people, whether employed by contractors or by himself.

PUBLIC CONTRACTS.

While neither the Federal Government nor any State government has undertaken to abolish tenement-house work, where the goods are sold to private purchasers, yet, where the Federal Government itself is a purchaser of clothing, as for the use of the Army and Navy, it has endeavored to protect its public servants by a prohibition of tenement-house work on all clothing manufactured by contractors. This prohibition in the case of the Army was brought about through revelations regarding the conveyance of measles and similar diseases during the

Spanish-American war. A clause is now inserted in contracts specifying that all work, including operating, button-holing, pressing, etc., must be done in a regularly organized factory conforming to the factory laws of the State. Clothing for the Navy is manufactured at the navy-clothing factory, navy-yard, Brooklyn. Clothing for the militia of the several States is usually purchased from the War Department, and is, therefore, protected by the specifications of that Department. These contracts have not been framed with the purpose of protecting the hours and wages of employees, as is the case in the contracts of the Government of Great Britain or the London county council, where, in addition to the prohibition of subletting or subcontracting, there is also a provision for a minimum rate of wages and an 8-hour day of employment. While it is perhaps inadvisable that the Government should go so far as to fix rates of wages to be paid by contractors on public work, it is nevertheless a proper step to introduce a clause fixing the maximum number of hours to be employed on the class of work required by the Government, except in the single case of unforeseen military emergency. A clause of this kind, requiring clothing to be made upon the premises of the contractor and limiting the hours of labor to eight per day, is also a proper condition to be inserted in all contracts of State and municipal authorities for the manufacture of clothing for uniformed officials of all grades.

UNEMPLOYMENT.

Regularity of employment is undoubtedly the most important privilege for which workingmen can ask. The ideal cherished is such a condition of permanent prosperity as would enable workmen to find employment at all times in their particular occupations, if they wished to do so. On account of irregular employment, the daily rate of wages, as already stated, does not alone indicate the condition of the working people. The daily rate of wages does not respond like the prices of commodities to the alternating periods of prosperity and depression. Industrial changes show themselves rather in the amount of employment than in the rate paid per day.

The causes of unemployment are as varied as the entire industrial and social conditions of the people. Possibly they may be considered under the three divisions of personal, climatic, and industrial causes.

PERSONAL CAUSES OF UNEMPLOYMENT.

Personal causes are those mental, moral, and physical defects which show themselves either in the inability and inefficiency of the workman or in his unwillingness to work. Here are included all the varieties of personal inaptitude, ranging from idiocy, intemperance, and vice

to old age, sickness, and accident. Classes of persons thus affected are always on the margin of employment. When industrial conditions are depressed, they are the first to be discharged; when industrial conditions improve, they are the last to be employed. It is always a difficult problem in individual cases to assign the true cause of their lack of employment. In some cases their personal deficiencies are plainly the result of their industrial occupation; in others they are the result of heredity, evil associations, and defective education. Statistics regarding this class of people have been compiled by the leading charity societies of this and other countries, and the following table shows for certain cities the estimates which the charity agents place upon individual cases with reference to the causes of their poverty. The "personal equation" of the observers accounts in a large measure for the differences in comparative results.

Relative importance of chief causes of poverty of applicants to certain charity organization societies.

Causes.	Baltimore, 1899.	Boston, 1899.	New York.		
			1891.	1896–97.	1899–1900.
Within the family:					
1. Disregard of family ties	6.3	7.5	.6	1	8.3
2. Intemperance	9	20.9	10.7	10.7	13.8
3. Licentiousness	4	5.2	.....	.....	1.2
4. Dishonesty or other moral defects	3.6	4.1	2	.4	2
5. Lack of thrift, industry, and judgment	18.6	17.6	10.5	4.8	10.2
6. Physical and mental defects	9.7	4.5	3.4	1.6	2.8
7. Sickness, accident, or death	30.3	28.5	21.8	15.1	25.1
Outside the family:					
8. Lack of employment not due to employee	9	9.3	37.6	47	19.5
9. Defective sanitation	.4	.1	.....	.2	.1
10. Degrading surroundings	.2	.1	.....	.....	.8
11. Unwise philanthropy	1.3	.3	.....	.....	.3
12. Unclassified	7.4	1.9	13.4	19.2	16.9

It will be seen that in Boston 20.9 per cent of the cases handled in 1899 were ascribed to intemperance, whereas in New York only 10.7 to 13.8 per cent were ascribed to intemperance, and in Baltimore, 9 per cent. Lack of thrift, industry, and judgment is estimated at 17.6 per cent in Boston, 18.6 per cent in Baltimore, and 4.8 to 10.5 per cent in New York. These personal causes, combined with dishonesty, licentiousness, and disregard of family ties, together indicating misconduct, bring a total of 55.3 per cent in Boston, 41.5 per cent in Baltimore, and 16.9 to 35.5 in New York.

Besides the personal qualities indicating misconduct, there are also matters of personal capacity. Under this heading, sickness, accident, or death in the family is the leading cause, preceding all other causes in Baltimore and Boston, and all others except "lack of employment not due to employee" in New York. In the cities under examination, from one-sixth to nearly one-third of the cases are ascribed to accident, sickness, or death in the family.

Lack of employment not due to the employee is credited with 9 per cent of the causes in Boston and Baltimore in 1899, and 19.5 per cent at the same period of prosperity in New York, while in the year 1896–97, the lowest point of the industrial depression, the figures for New York rise to 47 per cent. These differences indicate partly the difficulty in deciding whether lack of employment is due to an insufficient opportunity for employment in the locality, or to the personal inefficiency of the applicant. In general, it might be asserted that the applicants for charity are the inefficient, and that their lack of employment is largely the lack of demand for inefficient workers. At the same time the fact that in periods of industrial depression the unemployment column increases very largely, reaching 47 per cent in New York in 1896–97, indicates that this particular cause is an important, if not the leading single cause, in the poverty of applicants for charity.

At the other end of the scale are the members of labor organizations, very few of whom are applicants for charity. In times of depression they almost never call upon the charity societies for assistance. They are able to tide over the period of unemployment by means of their savings or the assistance of friends or of union funds. The New York Bureau of Labor Statistics has compiled from time to time reports showing the causes of idleness of organized laborers in that State. The following table is typical of these reports in general. It shows that at the end of September, 1900, the 31,339 members of labor organizations in the State of New York who were idle numbered 13.3 per cent of the membership of the unions; 23,643 were idle from lack of work, 4,080 on account of strikes or lockouts, and 1,481 by sickness. This indicates that 75.5 per cent of the unemployment of organized laborers on that date was due to lack of work, 13 per cent to strikes or lockouts, and 4.7 per cent of the total to sickness.

Causes of idleness at the end of September, 1900.

A.—NUMBER.

Trades.	No work.	Bad weather.	Strike or lockout.	Sickness.	Superannuation.	Other causes.	Total number reported.
Building, stoneworking, etc	8,392	156	2,019	270	28	857	11,722
Clothing and textiles	7,145	.....	37	370	165	251	7,968
Metals, machinery, and shipbuilding	1,596	7	78	144	46	43	1,914
Transportation	2,066	.....	27	133	8	227	2,461
Printing, binding, etc	1,536	.....	19	207	108	26	1,891
Total, all trades	23,643	166	4,080	1,481	501	1,468	31,339

B.—PERCENTAGE.

Building, stoneworking, etc	71.6	1.3	17.2	2.3	.3	7.3	100.0
Clothing and textiles	89.7	.....	.5	4.6	2.1	3.1	100.0
Metals, machinery, and shipbuilding	83.4	.4	4.1	7.5	2.4	2.2	100.0
Transportation	83.9	.....	1.2	5.4	.3	9.2	100.0
Printing, binding, etc	81.2	.....	1.0	10.9	5.5	1.4	100.0
Total, all trades	75.5	.5	13.0	4.7	1.6	4.7	100.0

CLIMATIC CAUSES OF UNEMPLOYMENT.

In considering climatic causes of unemployment we are met by a difficulty in describing what unemployment itself actually is. Unemployment should certainly be distinguished from vacation. Vacation is a discontinuance of work for the sake of recuperation, whereas unemployment is either the inability to work or to find work when in need of it. The loss of wages in a vacation is discounted by means of a higher scale of wages while working. Salaried classes paid by the year count their incomes as continuous both during the period of employment and the period of vacation. The nearest approach to this desirable position among working people is in such trades as that of the glass-blowers, who, in their agreements with their associations of employers, provide for a shut down during the two summer months, while, to compensate for the loss of wages at that time, they are able to maintain a very high scale of pay during the period of employment.

The iron and steel workers have also a customary vacation in the summer, at the time when the mills are overhauled and repaired. Certain seasonal trades, like the building trades, being less desirable on account of the three or four months of winter idleness, and being controlled by strong labor organizations, are able to agree on scales of wages high enough to compensate largely for the period of slackness. Cases of this kind can hardly be called periods of unemployment; they approach more nearly the character of a vacation. In other occupations, like those of clothing workers, coal miners, railway trackmen, and others, which are also seasonal in character, there is in addition an irregularity of employment dependent on industrial conditions and the supply of the labor market. Here seasonal causes of unemployment merge into industrial causes of unemployment, and, except for the more highly paid mechanics, the vacation period is poorly compensated by earnings in the employment period.

The climatic causes of unemployment are found either in the weather or in the seasonal changes in consumption. Weather conditions affect workers in the building trades, farm laborers, sailors, railway trackmen, and many others. Changes in consumption affect such employees as coal miners and clothing workers. Regarding unemployment on account of the weather, the progress of many industries is more and more overcoming weather conditions, and means are being devised for spreading out employment more regularly through the year. The increase in truck farming, and especially in dairy farming and stock raising, makes farm employment more and more continuous. There is a far larger amount of building carried on in winter than at any time heretofore, owing partly to the increase in the value of land and the necessity of bringing the investments in real estate quickly to the point of earning a return.

Among building and farm workers, those who continue to be unemployed during the winter are usually able to provide for themselves without working in the winter season. But the case is different with sailors, trackmen, and unskilled laborers on public works, who, with their meager wages, and living as they largely do in cities, find their condition in winter greatly depressed. This class of common labor is that which falls most quickly upon the public and private charities.

The case is somewhat different with those seasonal industries whose irregularity depends upon the demands of consumers. Here the problem of regular employment is simply the expensiveness of stocking up the product and storing it until the season when the consumers make their purchases. This appears especially in the clothing and coal mining trades. Anthracite coal is used mainly for domestic purposes, whereas bituminous coal is used mainly for manufacturing purposes, consequently anthracite mining is more seasonal in character than bituminous mining. The following table shows for the years 1890 to 1900 the average number of days of employment of bituminous and anthracite coal miners in the United States:

Employment of coal miners.[1]

Year.	Number of days active.		Year.	Number of days active.	
	Bituminous.	Anthracite.		Bituminous.	Anthracite.
1890	226	200	1896	192	174
1891	223	209	1897	196	159
1892	219	198	1898	211	152
1893	204	197	1899	234	173
1894	171	190	1900	234	166
1895	194	196			

[1] Report of United States Geological Survey, Production of Coal, 1900, p. 39.

The table shows that the average number of days of employment for bituminous miners has ranged, during eleven years, from 171 to 234, and is considerably larger in 1899 and 1900 than for any preceding year. The average number of days for anthracite miners has ranged from 150 to 203, and the increase in 1899 and 1900 fails to bring the average to the position attained in the years prior to 1897. This indicates a tendency on the part of the anthracite producers to concentrate their production in the winter months, contemporaneous with the demands of the consumers. It is stated by witnesses before the Industrial Commission that this policy is due to the great expense of storing anthracite coal, including rehandling, waste, breakage, and deterioration in the appearance of the coal, which gets dull after standing, so that customers will not pay so much for it. It is stated that, to meet the winter demand by contemporaneous production, each mine owner wishes to extend his workings, so that the productive capacity exceeds what would be needed if the mines ran uniformly through

the year. The fact also that the investment of capital involved in extending the workings is much less than that involved in storing the coal, makes it more economical to adopt the former policy. In this way coal mining differs from other industries the product of which meets a seasonal demand, such as bicycles, agricultural implements, etc. In these industries the amount of capital invested in the manufacturing plant is so large, compared with the turnover, that it is more economical to use the plant continuously through the year and stock up the product for sale when the season of demand approaches.

The clothing trade is similar to the anthracite coal trade in the very small investment, compared to output, which the machinery requires. A sewing machine worth $50 will turn out a product worth $500, and the loss of interest on the investment in the machine is much less than the loss on the stock of goods which would be produced by the machine. In addition to this there is a peculiar feature in the clothing trade, in that consumers can not always be relied upon as to the styles and fashions which they will call for when the season approaches. The manufacturers do not like to stock up with goods that may prove to be out of fashion.

There is, however, an additional factor in the coal and clothing trades. The producers and manufacturers find it possible to concentrate production in a short, busy season, on account of the oversupply of unorganized labor and the necessity under which the employees exist of working more hours when they find employment in order to compensate for the period of idleness. Were it impossible to find at hand a large amount of surplus labor, or were the employer compelled to invest largely in labor, as he does in machinery, it would doubtless be found more profitable to extend production more regularly through the year and to store up the product, or to make lower prices in the dull season in order to induce retail and wholesale dealers themselves to purchase stocks and hold them until the consumers were ready to make their purchases. Certain railroads shipping anthracite coal are already finding it to their advantage to erect large storage plants, but this is done chiefly for the sake of economizing cars. Were the supply of labor less redundant, it would probably be found necessary to economize labor in the same way. The matter of fashions, which plays a part in the clothing manufacture, is not important in the ready-made trade, except in the manufacture of women's garments. It is mainly the presence of a large supply of immigrant workpeople and their willingness to work more hours that makes it possible to concentrate production in that trade, as well as in anthracite mining. This being so, the efforts of the labor organizations in these occupations to reduce the hours of labor to eight per day and to reduce overtime, provided they are successful, will result in extending the period of employment through a larger portion of the year.

INDUSTRIAL CAUSES OF UNEMPLOYMENT.

Personal causes of unemployment, like climatic causes, often merge into industrial causes. This is especially apparent in the matter of the health of the working population. One witness before the Industrial Commission, representing the management of a smelter works, states that the reduction under the law of Utah from 12 hours to 8 hours a day in that industry enabled the employees, who formerly could work only about 24 days a month, to increase their attendance practically to 30 days a month. Sickness and accident, resulting from long working-days or defective and dangerous machinery, cause a large amount of compulsory unemployment; and it is to be expected that in the future, as hours of work are reduced and factory legislation becomes more comprehensive and effective, unemployment from this cause will be reduced.

STRIKES.

Strikes and lockouts as a cause of unemployment are a peculiar feature of modern industry in all lines except agriculture. The loss of employment through strikes, however, is often exaggerated. It is easy enough, when employees have been on a strike for two or three months, to compute their losses in wages by multiplying the number of days the strike has lasted by the average wages while at work. This method often produces a startling result, but it is in most cases an exaggeration. As shown above, employment is not continuous in any trade, and it might almost be stated as a rule that the number of strikes and the duration of strikes are greatest in those occupations where, owing to seasons, the irregularity of employment is greatest. This subject is considered more fully in a succeeding section of this chapter.

MACHINERY.

Machinery and improved processes have frequently been spoken of by witnesses before the Commission as the leading cause of unemployment. Undoubtedly many examples can be given where a new invention has displaced large numbers of workmen. The McKay sewing machine sews the uppers to the soles of 100 pairs of shoes in 1 hour and 38.3 minutes, as against 98 hours with the use of the awl, pincers, and strap under the hand method, indicating that with this particular invention one man does the work of sixty.[1] The representative of the boot and shoe workers before the Industrial Commission believes that with the existing supply of labor and machinery the shoe factories of the country could supply the consumption of a year by the work of four months.[2] Owing to displacement of labor and lack of organiza-

[1] Thirteenth Annual Report Commissioner of Labor, Vol. I, p. 119.
[2] Reports Industrial Commission, Vol. VII, p. 359.

tion, wages in this trade have been reduced, but at the same time the margin of profit to the manufacturers, on account of their severe competition, is very low. The prices of shoes have been reduced greatly, to the benefit of the retail dealer and the consumer. Many other instances might be cited, showing the effect of machinery on the displacement of labor. The ultimate tendency of machinery is unquestionably to lower costs and to increase demand, and after a few years, at the most, it is found that more people are employed in every industry where the labor saving improvements have been introduced than were employed before.

Even upon the first introduction of machinery, while it undoubtedly displaces labor and causes hardship, the extent of this injury depends mainly upon the general industrial conditions of the country at the time. When industry is expanding, when the general level of prices is rising, when wages in general are increasing, when employment is abundant, less complaint is heard on account of the introduction of new machinery. On the other hand, in periods of depression, when general conditions are unfavorable, machinery appears to be the immediate cause of a displacement, which, however, is more properly ascribed to general unfavorable conditions of business. The influence of general conditions, combined with new economies of labor-saving improvements, may be seen in the most striking way in the following table, showing the number of employees on the railroads of the United States for the years 1890 to 1900:

Number of railroad employees.[1]

Year.	Number employed.	Number per 100 miles.	Ton-miles per employee.
1890	749,301	479	101,704
1891	784,285	486	103,500
1892	821,415	506	107,426
1893	873,602	512	107,129
1894	779,608	444	103,046
1895	785,034	441	108,565
1896	826,620	454	115,323
1897	823,476	449	115,583
1898	874,558	474	130,440
1899	928,924	495	133,182
1900	1,017,653	529	139,133

[1] Thirteenth Annual Report on the Statistics of Railways in the United States, for the year ending June 30, 1900.

This table shows that on June 30, 1893, the number of employees on the railroads had increased to 873,602, and on June 30, 1894, the first year of the period of depression, the number was only 779,608, a decrease of 93,994. This decrease occurred mainly in the ranks of the unskilled laborers, including track men. There was no decrease in the number of telegraph operators or dispatchers, and a varying decrease in the ranks of train men and switchmen. The table also

shows the number of employees per 100 miles of line, and from this it appears that the number decreased from 512 in 1893 to 444 in 1894. The economies which the railroads introduced during this period of depression have made it possible, in the later period of recovery, beginning in 1897, to conduct the operations of the roads with a much smaller proportionate number of men. Whereas, prior to 1895, the number of tons carried 1 mile per employee was about 107,000, in the years of depression, 1896 and 1897, the number was increased to 115,000, and the succeeding increase of tonnage enabled the roads in 1900 to carry 139,133 ton-miles for each employee. Yet so great has been the increase in business that the number of employees in 1900 exceeded 1,000,000, an increase of 238,000 above the number employed in 1894. The industrial depression not only displaced nearly 100,000 men, but it also stimulated the roads to improvements analogous to new machinery; yet the displacing effect of these improvements has been many fold exceeded by the demand for labor in the succeeding period of business activity.

Other labor-saving inventions might be adduced showing similar relations with the industrial depressions. The type-setting machine was generally introduced about the time when the depression of 1893 set in, and thousands of compositors were thrown out of work, but the returning prosperity of four or five years later has given employment to even a larger number.

Statistics showing the amount of unemployment in different occupations, at different seasons and in consecutive years, have not been compiled in the United States by any public authority except the New York bureau of labor statistics. Even the compilations of this bureau extend back no further than the beginning of the year 1897. They include only the organized labor of the State of New York, as reported quarterly to the agents of the bureau by the secretaries of the several local organizations. It is impossible to collect statistics of any value whatever relative to the unemployment of unorganized labor, among whom lack of employment is a far more serious question than it is with skilled and organized labor. The reports of the New York bureau, while they have been carefully compiled, are defective in that the membership of the unions is constantly changing. Weaker unions are falling out and new ones are being organized. The membership of the unions reporting to the bureau increased from 138,249 in March, 1897, to 234,792 in March, 1901. The new organizations added to the list introduce variations of unemployment which perhaps did not exist in the earlier organizations included, and it is impossible to determine exactly the extent of these variations. However, the results of the reports are interesting, and may be taken as, on the whole, trustworthy. The following table, compiled from the reports of the New York bureau, shows from June, 1897, to March, 1901, the average number of days

of employment of organized labor in that State, for each quarter of the four years covered, for all trades, and for five leading subdivisions. The percentages are computed on the basis of 78 days per quarter, as being full employment for 13 weeks of 6 days each. From this table and the accompanying diagram can be seen the combination of climatic and industrial causes of unemployment.

EMPLOYMENT AND UNEMPLOYMENT OF ORGANIZED LABOR (MEN), NEW YORK STATE, 1897–1901.[1]

AVERAGE NUMBER OF DAYS EMPLOYED.

Date.	All trades.	Building trades.	Clothing and textiles.	Metals, machinery, etc.	Printing.	Transportation.
1897.						
January to March	58	57	55	62	64	.....
April to June	69	56	44	59	63	.....
July to September	67	61	64	56	63	.....
October to December	65	60	54	68	67	.....
1898.						
January to March	62	53	57	73	65	.....
April to June	61	56	37	71	65	.....
July to September	65	62	59	54	62	.....
October to December	63	53	58	74	67	75
1899.						
January to March	64	51	51	74	67	77
April to June	70	68	68	75	69	74
July to September	71	70	70	76	68	76
October to December	68	62	61	75	68	76
1900.						
January to March	66	54	62	76	66	68
April to June	.....	.....	.....	.....	.....	.....
July to September	67	60	54	74	69	76
October to December	.....	.....	.....	.....	.....	.....
1901.						
January to March	67	55	58	73	70	78

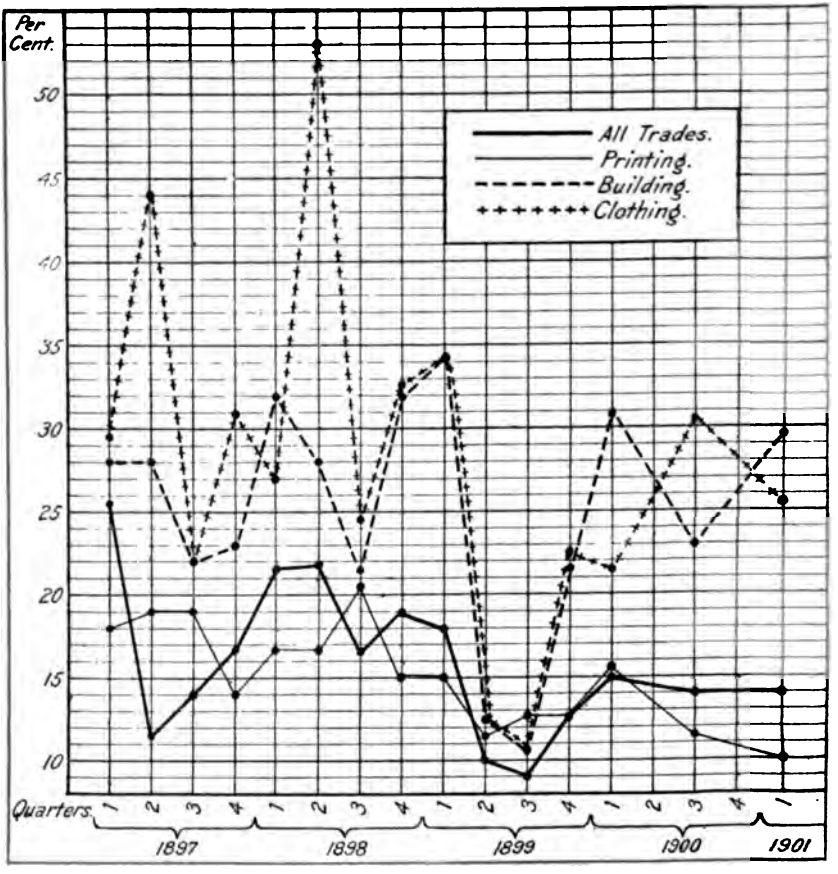
PER CENT OF UNEMPLOYMENT, 78 DAYS PER QUARTER BEING 100.

1897.						
January to March	25.7	27.0	29.5	21.5	18.0	.....
April to June	11.5	28.2	43.6	24.4	19.2	.....
July to September	14.1	22.8	18.0	28.2	19.2	.....
October to December	16.7	23.1	30.8	12.8	14.1	.....
1898.						
January to March	21.5	32.1	27.0	6.4	16.7	.....
April to June	21.8	28.2	52.6	9.0	16.7	.....
July to September	16.7	21.5	24.4	30.8	20.5	.....
October to December	19.2	32.1	32.1	5.1	15.1	7.6
1899.						
January to March	18.0	34.6	34.6	5.1	15.1	15.4
April to June	10.3	12.8	12.8	3.8	11.5	18.7
July to September	9.0	10.2	10.2	2.5	12.8	16.5
October to December	12.8	21.5	22.8	3.8	12.8	16.5
1900.						
January to March	15.4	30.8	21.5	2.5	15.4	25.3
April to June	.....	.....	.....	.....	.....	.....
July to September	14.1	23.1	30.8	5.1	11.5	16.5
October to December	.....	.....	.....	.....	.....	.....
1901.						
January to March	14.1	29.5	25.6	6.4	10.2	14.3

[1] Compiled from reports of New York bureau of labor statistics.

The largest proportion of unemployment shown in the table is for the first quarter of 1897, this being the winter quarter, when the average number of days employed for all trades was 58 of the possible 78, showing that the 138,249 organized workmen were idle 25.7 per cent of the possible working days. The succeeding winter quarters of 1898, 1899, 1900, and 1901 show a gradual falling off in the amount of unemployment, to 21.5 per cent in 1898, 18 per cent in 1899, 15.4

Average days unemployed per quarter—Per cent of possible working days, 1897–1901, New York organized labor.



per cent in 1900, and 14.1 per cent in 1901. In the quarters from July to September there is also a falling off year by year, from 14.1 per cent in 1897 and 16.7 per cent in 1898, to 9 per cent in 1899, and an increase to 14 per cent in 1901. This indicates that there was a steady improvement in industrial conditions from 1897 to 1899, with a slight lapse in 1900–1901.

The building trades constitute the largest proportion of the organized labor reported in these tables, and, considered apart from the

others, it will be seen that their proportion of unemployment reached the highest point in the first quarter of 1899, namely, 34.6 per cent, and the lowest in the third quarter of 1899, only 10.2 per cent. The winter quarters show an unemployment of 27 to 34 per cent for five years. The largest amount of unemployment in the clothing trade was in the second quarter of 1898, this being both the lowest point of the period of depression in that trade and also the dull season of the year. The lowest point of unemployment occurred in the second and third quarters of 1899, when a proportion as low as 10.2 per cent was reached. Then followed two quarters of high unemployment in 1898 and the beginning of 1899, namely, 32.1 and 34.6 per cent. Apart from the six months of exceptional business activity in 1899, it will be seen that in this trade unemployment has not been less than 18 per cent, this being the proportion in the third quarter of 1897, and that for the other quarters it has fluctuated from 20 to 35 per cent.

The employees in the metals and machinery trade show their highest period of unemployment in 1897, and the lowest in the third quarter of 1899 and the first quarter of 1900. There was an exceedingly large unemployment, 30.8 per cent, in the third quarter of 1898. The printing trade shows a more uniform amount of unemployment, generally above 14 per cent prior to 1899, and below 14 per cent since the beginning of that year, and falling as low as 10 per cent in 1901.

EMPLOYMENT AGENCIES AND BUREAUS.

The foregoing causes of unemployment are deep seated in the nature of modern industry or the climatic conditions of the country. For these reasons they can not be overcome by direct methods. Their remedy lies in a better organization of employers and employees, more steady expansion of trade, and greater stability of industry and of legislation affecting industry. These are not problems directly of unemployment, but rather of taxation, currency, monopoly, immigration, overproduction, and technical advances in industry. Their treatment must be undertaken, not primarily as measures of providing for the unemployed, but as measures for improving the conditions of business. Whatever improvements can be brought about in these lines would benefit employers by securing for them a more steady use of their machinery and equipment, and the employers in turn will then seek the services of the unemployed.

But there is another cause of unemployment which can be dealt with more directly, namely, the workman's ignorance of the labor market. While the greatest boon of free labor is the opportunity to leave one employer and to seek another, or to go from one locality where employment is scarce to another where it is abundant, yet the value of this privilege is greatly lessened if a large amount of time is wasted through lack of information regarding those localities where labor is in

demand and those employers who are expanding their work. Even should general industrial conditions become permanently more stable, there will always remain a large amount of fluctuating enterprise, such as building, railway construction, harvesting, while the change of industry from one locality to another, new industries arising and older industries disappearing, and new sections of the country opening up, will make demand for labor in any given locality irregular. Witnesses before the Industrial Commission have dwelt with great emphasis on what one calls the unscientific distribution of population—its congestion in certain cities and localities where the demand is much greater than the supply. A witness from New York especially emphasizes the need of well-arranged means of communication between city and country, so that employers at a distance can be brought into direct contact with the large numbers of unemployed in that city.

PRIVATE AGENCIES.

As a result of the ignorance of both employers and employees as to supply of and demand for labor, growing out of these conditions, private employment agencies have sprung up in large numbers in all cities of the country, supported by fees paid by applicants. They are more or less effectual in bringing together the applicant for help and the applicant for work. Many private agencies, however, have been charged with serious abuses, such as accepting a fee whether there is a prospect of finding a position or not, refusing to refund it when the position is not secured, and sending laborers to distant cities to fill purely fictitious openings. The private agency is tempted, for the sake of the fee, to represent falsely the pleasant surroundings, agreeable foreman, long job, and the desirable character of work which it promises to secure. These abuses have led to corrective legislation in a few States.[1] Such legislation usually requires a license fee of $10 to $200, and provides for inspection by a licensing officer. In Massachusetts and Maine the law requires that the applicant's fee be returned where employment is not found. The license fee and the inspection are intended to limit the number of agencies and to exclude the more unscrupulous, and in at least one State (Massachusetts) this object has been brought about with a high degree of success. In other States complaints are often reported by the bureaus of labor statistics, showing the abuses and exactions of these agencies.

Besides the private employment agencies, which charge a fee, there are philanthrophic agencies under the management of charitable and religious societies. These provide for a limited number of unemployed, but their efforts extend mainly to the destitute, the dissipated, and the inefficient. For this reason employers doubt their ability to furnish

[1] Reports Industrial Commission, Vol. V, p. 165.

desirable help, and they are often compelled to have recourse to wood yards and other devices for creating employment on their own account.

The unemployed members of trade unions are usually cared for by the secretaries and business agents of the local bodies. The union provides a labor bureau and "waiting list," and from this list, in the order of enrollment, members are furnished to employers who seek that class of help. Trade journals of the several unions give information to a large extent, covering the country at large, showing the places where employment is scarce and those where it is abundant. The Amalgamated Society of Engineers, the Granite Cutters, and some other organizations have developed a system of intelligence bureaus in which each local union notifies the national headquarters of the number of its members unemployed and of the number of positions which it is unable to fill. By means of the telegraph, the unemployed of one locality are directed to another locality in the same section of the country where unfilled positions are reported by the local secretary. While the employment offices of trade unions are usually effective, they, of course, reach only their own members, and are of no assistance to the large number of unorganized laborers, who are compelled to depend on the private agencies, or themselves to go about in search of work.

A very important consequence of the establishment of labor bureaus by trade unions is the abolition of the former practice of using liquor saloons as intermediaries in securing employment, and also as places for the payment of wages. This has had a decided effect in reducing the amount of drinking.

FREE PUBLIC EMPLOYMENT OFFICES.

To offset the abuses of private agencies there have been established within the past 10 years about 25 public free employment agencies in a number of cities in different parts of the country. Nearly one-half of these agencies were created in 1901. These are supported usually by funds voted by the State legislature, and the administration of the office is placed under the charge of the State commissioner of labor. Ohio was the first State to organize a public employment bureau, five offices being established—in Cleveland, Cincinnati, Columbus, Dayton, and Toledo in 1890. Foreign countries had preceded the United States in establishing these bureaus. In France their origin dates from 1848, but the offices established at that time were discontinued later, and not until 1886 did the present system find a footing. In England offices were established as early as 1885, and in Switzerland in 1888. The first office established in Germany was in 1893, and in that country the greatest success has been gained, there being at the present time more than 100 offices in successful operation.

It is not possible to compare accurately the operations of public employment offices in the United States one with another, since the bases of their reports vary. In certain offices every applicant sent to an employer is counted as a position filled; in others only those applicants who are known to have been actually employed.

The experience of public employment offices in the United States is, with two or three exceptions, unsatisfactory. The main obstacle in the way of their successful operation is the lack of confidence on the part of large employers of labor. Superintendents of employment offices are often appointed as representatives of labor interests, and are not able to establish close relations with the larger employers of labor. It is for this reason that they have, for the most part, become agencies for domestic help. In New York in 1900 there were registered at the public office 2,157 men and 3,575 women, while employers called for only 201 men and 3,325 women, and positions were secured for 191 men and 2,778 women. The public offices in Germany, which have achieved the greatest success in interesting employers, are organized under the supervision of a board, which includes an equal number of employers and employees, with a chairman who belongs to neither class. The superintendent of the office at Seattle, which also has the confidence of the employing interests of the city, is appointed by the city civil service commissioners, who, though not selected as representatives of capital and labor, as in Germany, are nevertheless recognized as being impartial to both interests. Free employment offices are liable to fail in securing the confidence of trade unions, if they furnish nonunion help or if they furnish help to employers in time of strikes. The law of Illinois prohibits the office from being used in the latter way.[1] It is questionable whether these offices can be made useful to the unemployed classes of the country on any large scale if they take sides with either the capitalist or the trade union. They are, in the first place, dependent upon the confidence of the employer, for without his patronage the office has no existence and the laborer no employment. That they may retain his patronage and be able to supply positions to the unemployed, they must convince the employer that he will secure the very best help obtainable, although it be to the disappointment of many applicants. If the employer calls for union help, the office should be able to furnish such help if it can be secured; if he wants nonunion men, then the office should seek such help. If he expresses no choice, the office should not be concerned in the matter and should seek to furnish the best help without reference to trade affiliations. If an order is received and the office learns that a strike is in progress, each applicant should be notified of the fact in order that he may go, if at

[1] Reports Industrial Commission, Vol. V, p. 164.

all, with a full knowledge of existing conditions. In this way only can the public employment office fulfil its purpose in an impartial way and thus extend its usefulness both to the employer upon whom it depends and to all the unemployed for whose help it is created.

Another obstacle in the way of successful operation of public employment offices is the inadequate appropriations made for their support. It can scarcely be expected that an office with only $2,000 yearly appropriation for salaries, rents, correspondence, etc., can extend its usefulness beyond the mere routine of clerical work.

The following table shows, for leading public employment offices, the applications for help and for employment, and the number of positions filled in the year 1900:

Public employment offices in the United States, 1900.[1]

	Applications for help.		Applications for employment.		Positions filled.	
	Males.	Females.	Males.	Females.	Males.	Females.
Cleveland	312	2,379	2,253	1,606	298	1,464
Columbus	1,270	2,985	1,217	1,895	499	1,581
Cincinnati	1,323	2,018	2,552	1,463	1,246	1,033
Dayton	2,507	4,385	3,113	2,691	1,701	1,954
Toledo	1,196	4,062	1,944	2,121	970	2,598
St. Louis	1,365	916	3,535	687	1,340	568
Kansas City	3,451	1,792	5,792	1,519	3,201	1,077
Chicago:						
North Side	4,580	5,413	5,857	4,761	3,991	4,752
South Side	8,811	10,737	10,681	8,671	7,973	8,501
West Side	3,358	2,643	4,604	2,711	3,358	2,643
New York	2,157	3,575	201	3,325	191	2,778
Seattle	.....	.....	.....	.....	20,652	5,468

[1] St. Louis, year ending October 1, 1900; Kansas City, nine and one-half months, beginning December 18, 1899, and ending October 1, 1900.

Free employment offices in the United States are so few in number, and the movement is as yet in a shape so experimental, that very little effort has been made toward cooperation among the offices in different cities, such as exists among the German offices. The possible extent to which the usefulness of public employment offices might be carried in the United States may be inferred from the following account of such offices in Bavaria and other German States, furnished to the Industrial Commission by Mr. Kuczynski, expert agent of the Twelfth Census.

PUBLIC EMPLOYMENT OFFICES IN GERMANY.

The public employment offices in Germany, which correspond to the State bureaus in America, are either directly municipal or conducted by philanthropical organizations (often subsidized by the cities). The latter present the older form, but they are constantly adapting their constitutions and methods to those of the municipal offices, often even merging into them. The idea of municipal bureaus originated in 1893 in the city of Stuttgart, but, meeting with various difficulties there, it was really first put into effect in Erfurt and Esslingen in 1894. Stuttgart followed in 1895.

The offices are, as a rule, modeled after the trade tribunals, in which the boards are composed of an equal number of members chosen by the employers and by the

employees, the chairman belonging to neither class. Most of them are free, only a few charging a moderate fee. In case of a strike the office generally does not stop its activity, but notifies the applicants for employment, both individually and by written notices posted in the waiting room, as to the names of the employers whose establishments are involved in a strike or lockout.

The possibility of a local balance between the applications for help and for employment was soon found to be too small, especially in places of minor size, and the State governments of southern Germany took the initiative in the formation of territorial unions. Wurtemberg took the lead in 1895, Baden followed in 1896, and Bavaria in 1897 and 1898. Five other unions were formed in the north of Germany between 1897 and 1901. Aside from the unions and various territorial associations, a national association of public employment bureaus was created in 1898. This association in December, 1901, included 127 offices, about half of which were municipal.

In Bavaria, each of the eight provinces has 1 central public free employment office; there are besides 29 suboffices. Whenever a suboffice is unable to supply the demand for help or employment it reports to its central office. The central offices then exchange lists of all the applications which they do not succeed themselves in filling. They also exchange such lists with the offices of the neighboring States. One office in Baden has even recently begun an exchange with some near-by offices in Switzerland. In Wurtemberg each suboffice sends besides biweekly (Tuesday and Friday) a list of the unfilled applications for male help to the central office of the State, which immediately makes up a list for the whole State and sends it the same evening to all its suboffices, and for public posting to all other cities with more than 2,000 inhabitants, and all smaller communes which so desire. In a similar manner the Bavarian central offices send lists containing the unfilled applications for help and employment to a large number of places which have not a suboffice of their own. In both States every workingman can apply for work to his communal authority. It furnishes him a blank and sends this blank to the nearest employment office. Likewise each employer can apply to the nearest office for help. The office notifies the applicant for employment, either directly or through his communal authority, when it has a position for him, and notifies the employer by postal card when it sends him an employee, requiring from him a notification whether the help has arrived and whether he has been engaged. In 1900 one-sixth of the applications for help and one-fifth of those for employment filed by the largest 6 Bavarian offices were received from outside the city limits.

The expenses for the interlocal business are borne in South Germany by the State governments, which also grant half rates on the railways to employees who have secured through a public employment office a position in a distant place. They also otherwise assist the offices by returning the amount expended for telephone service, as in Wurtemberg, or by a direct appropriation, as in Baden. In the latter State the total income of the 11 offices existing in 1899 was composed of the following items: State, $2,400; counties, $1,500; municipalities, $2,000; other bodies, $1,000; fees, about $800. The total expenses were $7,350, or 12½ cents per position filled.

The largest 15 German offices in 1899 had 282,974 applications for help and 300,808 for employment; they filled 216,532 positions. In 1900 the 34 Bavarian offices filled 91,900 positions; the 17 of Wurtemberg, 31,526; the 12 of Baden, 59,354; the 9 cities of the Rhine-Main union, 36,640 (1899–1900); the 16 of the administrative district of Dusseldorf, 8,437 (1899–1900). In 1900 the office of Munich (490,000 inhabitants) alone filled 53,409 (1899, 40,295, at a total expense of $5,700, or 14¼ cents per position filled); Cologne (356,000), 21,941 (1899–1900); Frankfurt (260,000), 18,655 (1899–1900); Stuttgart (175,000), 17,423 (1900); in 1899 Mannheim (127,500), 17,222; Karlsruhe (93,500), 14,428; Freiburg i. B. (59,000), 8,606. The percentage of the positions secured for skilled laborers in 1899 was in Worms, 44.3; in Darmstadt, 44.4; in Frankfurt, 57.2; in Mayence, 60; in Munich, 65.5; in Wiesbaden, 65.6; in Würzburg, 77.9.

The public employment offices in Germany are by no means in a less difficult position than the State offices in America. The unions of employers are strongly opposed to them. The labor organizations, which formerly were likewise opposed to them, fearing that they would cause a decrease in wages, are now rather more friendly inclined toward the offices. But the assistance they render them is still slight in a number of places. The great success of the German offices is to a large extent due to the intercommunication among themselves.

HOURS OF LABOR.

A large amount of testimony has been taken by the Industrial Commission regarding the movement for fewer hours of labor, and the effects of reductions in hours upon production and upon the wages and conditions of workmen and their families. It is brought out that in nearly all occupations an increasing strain and intensity of labor is required by modern methods of production. Trade unions have generally been compelled to abandon their restrictions upon the quantity of work that a man shall turn out. The introduction of machinery and the division of labor have made it possible to increase greatly the speed of the individual workman. This intensity varies in different occupations. In glass blowing payment by the piece and unlimited output have resulted in peculiarly exhausting efforts. The glass bottle blower, says the secretary of the union, working 8½ hours, makes double the number of bottles, but his period of usefulness is 10 years shorter than 20 years ago. In Europe and formerly in this country a man could blow glass up to 60 years of age; now he can not continue work after he is 50 or 55. Machinery operates in some cases to increase the intensity of labor, as in the boot and shoe factories, where the operator is required to handle thousands of pieces in a day and to guide them through the machines.

The testimony of a representative of the Cotton Weavers' Association shows this increasing strain of work. He says:[1]

It is a general complaint, "I feel that tired at night, I go home and get my supper and do not feel like going out at all, but go right to bed." Anybody who works in the mills now knows it is not like what it was twenty-five or thirty years ago, because the speed of the machinery has been increased to such an extent, and they have to keep up with it. In some mills in this city, and probably in other cities in this State, the operative is compelled to turn off so much production per week, and if the production does not come up to the point, he or she is discharged. There was a time when that was not the case. They took their sewing and their knitting along, and there was no anxiety about how much work they could get off, but it is not so now. Now they work from the time they go in until they come out. You can see them going to-morrow morning at 10 minutes past 6, and they will not come out until 6 to-morrow night.

The intensity of exertion operates to a less degree in work on other classes of machinery where the feeding is nearly automatic. Even

[1] Reports Industrial Commission, Vol. XIV, p. 578.

where machinery has not been introduced, as in the case of bricklayers and carpenters, there has come about in the larger cities a more minute division of labor, so that one workman is occupied continuously on one kind of work, in which he acquires great speed.

It is certain that any programme for reducing this intensity of exertion must fail. The entire tendency of industry is in the direction of an increased exertion. Any restrictions on output must work to the disadvantage of American industry, and the employers are often right in their demand, usually successful, that such restrictions be abandoned. This being true, there is but one alternative if the working population is to be protected in its health and trade longevity, namely, a reduction of the hours of labor.

EXTENT TO WHICH THIS REDUCTION HAS PROCEEDED ALREADY.

This increased intensity of exertion is not found to so great an extent in farm labor. Nevertheless, testimony before the Commission shows that there has been a reduction in the Northern States in the hours of labor on farms, except in the seasons of harvesting. In the case of farm labor there is usually a longer period of rest in the middle of the day, which in the South often runs as high as two hours. This, of course, is a relief to the severity of the work, although it subtracts from the hours of leisure at the beginning and the end of the day.

EFFECT OF REDUCTION OF WORKING TIME ON OUTPUT.

A reduction in hours in both manufactures and agriculture has accompanied a remarkable increase in the use of machinery and the division of labor, and on this account it is often impossible to measure the effect of a reduction of hours on the quantity of output.

The American mechanic, too, works harder than he did formerly, whether the hours have been reduced or not, so that it can not always be maintained that a reduction of hours increases his speed. The character of his work and the method of payment have much to do with the result. It might be presumed that when paid by the day the workman would not increase his output per hour with the shorter day as much as when paid by the piece. But this is not borne out by the testimony.

The representative of a silk factory, indeed, holds that when employees are paid by the day the output in 9 hours might equal that in 10 hours in some departments, as the weaving department, though not in the spinning department; also where piece wages are paid instead of time wages. He says:[1]

> Where machinery comes in as a heavy element, a spindle is a spindle, and the more minutes it runs in a day the more work it will turn off. It can not go any more

[1] Reports Industrial Commission, Vol. XIV, p. 733.

in one minute than another, but it runs straight ahead, whereas in weaving the element of personality comes in. One has the knack of keeping his threads in straight, and another is careless and has to stop and mend them and lose 10 or 15 minutes' time. A really good weaver will get off a great many more yards than a poor one on the same machine, whereas a spindle is a fixed quantity and the more hours it runs the more work it does.

[Weavers] "are paid by the yard, whereas the spinner is paid by the day. They get day wages and they have no particular incentive to hustle; so long as they keep their ends up and keep the spinning machine going they are doing their duty. * * * There is little if any objection on the part of the hands to working overtime; you can not keep it up long; they get tired of it after a while, but for 2 or 3 months they rather welcome the change."

This witness had not actually tested the 9-hour day, but spoke from his judgment of the probabilities. Another witness, a representative of a large drop-forge establishment,[1] testified, after 3 months' experience with the 9-hour day, that there is a slightly larger average daily output than there was for the 10-hour day in both day work and piecework, though in every other respect work was done under similar conditions. This has not been due to the fact that methods were lax previously, for there was rigid supervision under the 10-hour system. A part of the gain has been made by reason of the fact that under the 9-hour system the men go promptly to work on the minute and work up to the very close of the day; also that a man can work normally at a higher rate of speed without pushing himself for 9 hours than he can for 10 hours. The fundamental reason, according to this witness, for the keeping up of the amount of production is to be found in the spirit of the men themselves. If the machines were operated at the highest rate of speed and were in perfect condition, and were continuously fed, a workman could not maintain his output up at the same amount if the hours of labor were shortened; but these perfect conditions are rarely, if ever, found. It can not be demonstrated mathematically just how it happens that a man can produce as much in 9 hours as he formerly could in 10 hours, but as a matter of fact it has been the experience of almost every manufacturer, says this witness, that "a man can and will and does do more the moment he is justly and fairly and liberally treated."

It is true also that the higher the wages and fewer the hours the greater is the pressure upon the employer to substitute labor-saving devices and to be more careful in his selection of high-grade workmen. No doubt it is true that often a given automatic machine will not run faster per hour in 8 hours than in 10 hours, but industry has by no means reached the limit of invention. Invention will cease only when the employer ceases to adopt new labor-saving machinery, and every reduction in hours and rise in wages keeps the employer further and further away from that sluggish policy. While a particular machine will not go faster in 8 hours than in 10 hours, the substitute

[1] Reports Industrial Commission, Vol. XIV, p. 659 et seq.

for that machine, which the 8-hour day presses upon the employer to adopt, will go faster. Less hours in this way have an indirect as well as a direct compensating effect. Not only do they make it possible for the workman to keep up his intensity of personal exertion during each hour of the day and to work more days at a high rate of speed, but they cause the employer to economize his labor at every point and to improve its quality by better selection. One advantage to the employer in less hours is the smaller number of breakages and injuries to machinery, owing to more alert attention on the part of the workmen. For the same reason it is often true that the quality of the work is better.

This pressure upon the employees accounts in part for the greatly increased use of machinery and division of labor in the more highly skilled occupations. A representative of the building trades who testified before the Commission maintained that the lessening of hours made the erection of buildings somewhat more expensive; a contractor stated that it had enabled employers to get better men and better work than under the long workday, and that they do more proportionately in 8 hours than they did formerly in 9; also that through invention and the introduction of machinery buildings are now put up as cheaply as they were in 1872 and 1873, when the hours were 10 a day.

A representative of the Chicago bridge and structural iron workers' union holds that the 8-hour day has so increased the efficiency of the laborer that there is actually more work done in 8 hours than was formerly done in 10 hours.

A boiler manufacturer, having adopted the 8-hour day, testifies that he does not think his men do as much in 8 hours as they did in 9 hours, taking one day as the basis of comparison; but that at the end of the year he believes he would find that they had done just as much as they did when they were working an hour longer. One condition necessary to bring this result is that he is careful to select the best grade of men in his employment and to treat them fairly. A manufacturer of mining machinery holds that it is to the interest of the manufacturer to employ his men only 8 hours, since he gets better services out of the men. Formerly, when the hours of machinists were reduced from 12 to 10, and again when they were reduced from 10 to 9 the same alarming predictions were made as now, when it is proposed to reduce them from 9 to 8; yet the inventions in machinery have made it possible for manufacturers to reduce their hours and still make as much money as they did formerly in the longer workday. This witness holds that the 8 hours in this industry are needed not so much to relieve the men of severe exertion as because a better educated man is required to do the work.

Representatives of the machinists' organization do not maintain that a reduction in hours will not immediately reduce the output; in fact,

their leading argument for less hours is not the severe physical exertion of machinists, but the larger opportunities for work for the unemployed, whose number is now increased by the overproduction consequent on increased efficiency of labor and labor-saving machinery. They declare, however, the improvements in machinery in this country and the energy of the workmen enable them to produce twice as much as the corresponding English workmen, and a still larger amount compared with the German. In this way, in course of time, the manufacturer overcomes the increased cost of reduced hours.

The 8-hour day in the sheet steel mills was brought about without difficulty, owing to the economy of adopting three shifts of 8 hours each. Prior to 1884 there were two shifts working 10 hours, and the furnaces lay idle between turns with coal in them, and had to be kept hot until the next set came on. The experiment was tried of increasing the speed and reducing the hours, introducing three shifts; and to-day three shifts are working in all these mills, and making nine instead of seven heats, as was formerly done in the 10-hour day.

REDUCTION OF HOURS IN MINING.[1]

The most important instance, in recent years, of the adoption of the 8-hour working day has occurred in the bituminous-coal mining industry. The strike of 1897 secured for the four leading Eastern coal States—Illinois, Indiana, Ohio, and Pennsylvania—in the bituminous mines the 8-hour day, and a similar reduction has been obtained in other Western States. In Utah the 8-hour day was secured in 1896 by action of the legislature, in a law applying to all mines and smelters. The difference in the methods by which this reduction was secured in the two cases adds interest to a comparison of the results which followed.

In Utah the operators and employers did not oppose the legislation at the time of its enactment, largely because they thought it might be the means of keeping down unions and strikes and disturbances among the employees. This object has apparently been obtained, since there are no active unions in the State. A similar law was enacted in Colorado in 1899, but was declared unconstitutional by the State court. At the same time a number of operators continued upon the 8-hour basis, even after the law was declared unconstitutional.

It should be noted that the reduction of hours in the bituminous-coal mines has not been strictly a reduction from 10 hours to 8 hours, since, under the 8-hour rule, a miner is required to be at his working place when the 8 hours begin and when the 8 hours end, and lunch time is taken from the miner's time rather than the employer's time; whereas formerly the 10 hours included the time spent in going from the mouth of the pit to and from the face of the coal. In the Pennsylvania district the period is 9 hours instead of 8, but includes

[1] See testimony on this subject in Reports Industrial Commission, Vol. XII.

the time spent in going to and from the mouth of the pit. Strictly speaking, the reduction is more nearly from 10 hours a day to 9 hours a day than from 10 hours to 8 hours. In Utah, however, in the case of the smelting works, the reduction is much more extreme, the hours formerly 12 per day, being reduced to 8. This is a reduction of 33⅓ per cent in the time, and would make necessary an increase of the working force, provided there were no increase in efficiency, by 50 per cent.

There is a general agreement that the fewer hours in the coal mines have increased the energy of the workmen, and that there has been little or no decrease in the amount of work turned out during the day. The men are stimulated "to do a good honest 8 hours' work;" the foremen do not find them asleep, as they used to, or lounging around or smoking.

The effect upon the efficiency of the workmen varies, however, with different occupations. While it is generally agreed that the miner does as much work in 8 hours as formerly in 10, it is held by a few witnesses that this is not true of the furnace men in the smelters, to which the laws of Utah and Colorado applied. The furnace can only take so much material an hour, and the furnace men can do no more work on that account. Another witness, however, asserted that the reduction of 33⅓ per cent in the hours of labor of smelter employees, which would be expected to require an employment of 50 per cent more men, absorbed only 30 per cent more men, and, combined with the reduction in wages of about 23 per cent on the basis of a day's work, resulted in a net increase in the cost of labor of about 10 per cent. The table of wages and hours submitted by this witness is here given in full, to which are added computations showing the wages per hour and the per cent of the increase per hour and the per cent of decrease per day in those wages following the enforcement of the 8-hour law of June 1, 1896. It shows reductions in the pay per day of 11 to 33⅓ per cent, with increases in the pay per hour of 11 to 33⅓ per cent.

Rates of wages, Hanauer Smelting Works, Utah.

Occupation.	After 10 per cent reduction, Jan. 1, 1894.	Under 8-hour law June 1, 1896.	After 10 per cent reduction, 1894.	Under 8-hour law.	Per cent increase per hour.	Per cent decrease per day.
			Cts. per hr.	*Cts. per hr.*		
Crushermen	$2.70 per 12 hours...	$2.40 per 8 hours..	22.5	30.0	33⅓	11⅓
Roast firemen	$2.25 per 12 hours...	$1.66 per 8 hours..	18.7	21.7	16⅔	25⅔
Roast helpers	....do	$1.50 per 8 hours..	18.7	18.7	None.	33⅓
Blast furnace feeders.	$2.70 per 12 hours...	$2 per 8 hours.....	22.5	17.5	20⅘	25
Furnacemen	....do	....do	22.5	17.5	20⅘	25
Furnace helpers	$2.25 per 12 hours...	$1.50 per 8 hours..	18.7	18.7	None.	33⅓
Laborers	$1.575 per 10 hours..	$1.40 per 8 hours..	15.7	17.5	11+	11+
Suppliers	$2.025 per 12 hours..	$1.50 per 8 hours..	16.8	18.7	11+	26
Teamsters	$2.25 per 10 hours...	$2.25 per 10 hours.	22.5	22.5	None.	None.
Night foreman	$4.05 per 12 hours...	$3.25 per 8 hours..	36.2	40.6	12	20
Day foreman	$144 per month	$144 per month ...				
Blacksmith	$4 per 10 hours.....	$4 per 10 hours....	40.0	40.0	None.	None.
Blacksmith helpers	$2.25 per 10 hours...	$1.75 per 10 hours.	22.5	17.5	20⅘	~ 25
Dump foreman	....do	$2.25 per 10 hours.	22.5	22.5	None.	None.

One witness states that with common labor under the Utah law there is very little difference in the amount of work accomplished; but others maintain that the greater energy applies throughout all employments of a manual character.

On the side of the employer there is abundant evidence that the shortening of the working day in the mines has strengthened the motive to greater economy of time and better use of machinery and labor-saving devices.

In some of the metal mines of Utah and Colorado three shifts have been introduced instead of two shifts of 10 hours each. The mine that works 8 hours can produce more than one which works 10 hours, not only because the men do as much in 8 as in 10 hours, but because under the 10-hour system the mine is idle 4 hours out of the 24; whereas, under the 8-hour system, one shift takes up the tools at the moment when the preceding shift lays them down, and no time is lost. It is contended by one witness that the system of shifts is impracticable in the bituminous coal mines. The loss occurs in operating the tipple at which the coal is loaded on the outside. It is held that where 200 or 300 men are employed, the day shift and night shift can not be successfully introduced, because the tipple can not be operated at night. On this account this witness claims that the operator endures a loss through the 8-hour day, since he loses 2 hours in the use of his machinery.

On the other hand, an operator in the Massillon district of Ohio states that where a mine is prepared to take care of the coal, a miner can produce as much in the 8 hours as he could before in the 8½ or 9 hours, because formerly during a large part of this time he was waiting for cars, and where the equipment of the mines has been improved and the coal is handled promptly outside, there is not much difference in the output. Plainly, if the miner sends up as much coal in 8 hours as in 10 hours, and the mine is equipped adequately to carry off the coal, then the two hours' loss of time in the use of the machinery is by no means an economic loss, since the machinery turns out the same amount of product in either case.

While the introduction of machinery in bituminous coal mining has for some time been advancing, the greatest advances have occurred in the past four years, following the time when the 8-hour day was introduced. The number of tons mined by machines in the entire United States in 1891 was 6,211,732; this had increased under the 10-hour system to 22,649,220 in 1897, an increase of 16,000,000 tons in six years. On the other hand, from 1897 to 1900, a period of three years under the 8-hour system, the number of tons mined by machines rose to 52,790,523, an increase of 30,000,000 tons. The proportion of the output mined by machines increased from 6.66 per cent in 1891 to 16.19 per cent in 1897, and then to 25.15 per cent in 1900. It is doubtless

true that the use of machines would have increased whether or not the 8-hour day had been introduced, and it can not be shown statistically that the fewer hours have stimulated the introduction of machinery; but individual witnesses who have appeared before the Commission have asserted this to be the fact, and the large increase in machine mining seems to substantiate the claim.

It is certain that with the shorter working day the employer is much more strict in his supervision of his men; that he requires them to be on time, and deals summarily with those who loaf or lounge about. This increased care in supervision, coupled with economies brought about by the use of machinery wherever possible, and the adoption in metal mines of three shifts instead of one, are important factors in keeping up the output under the 8-hour system. The two factors combined, namely, increased energy on the part of the employees and increased economy on the part of the employer, have certainly in the mining industry maintained a daily output equal to that which existed before the 8-hour day was introduced. This is shown in the following table, compiled from the reports of the United States Geological Survey and the Illinois commissioners of labor, showing the production of coal for the six years from 1895 to 1900:

Bituminous coal mining.

COUNTRY AT LARGE.

Year.	Output.	Average days active.	Average number employed.	Total days worked.	Average output per day.	Per cent mined by machines.
	Short tons.				*Short tons.*	
1894	118,820,405	171	244,603	41,827,113	2.84	.....
1895	135,118,193	194	239,962	46,232,628	2.90	.....
1896	137,640,276	192	244,171	46,808,832	2.72	19.17
1897	147,609,985	196	247,817	48,572,132	3.03	16.19
1898	166,592,028	211	255,717	53,956,287	3.09	20.39
1899	193,321,987	234	271,027	63,420,318	3.05	23.00
1900	212,513,912	234	304,975	71,364,150	2.98	25.15
			OHIO.			
1894	11,909,856	136	27,105	3,686,280	3.24	.....
1895	13,355,806	176	24,644	4,337,344	3.08	.....
1896	12,875,202	161	25,500	4,105,500	3.13	26.16
1897	12,196,942	148	26,410	3,908,680	3.12	31.51
1898	14,516,867	169	26,986	4,560,634	3.18	35.76
1899	16,500,270	200	26,038	5,207,600	3.17	41.35
1900	18,988,150	215	27,628	5,940,020	3.19	46.53
			PENNSYLVANIA.			
1894	39,912,463	165	75,010	12,376,650	3.22	.....
1895	50,217,228	206	71,130	14,652,780	3.43	.....
1896	49,557,453	206	72,625	14,960,750	3.31	12.29
1897	54,417,974	205	77,272	15,840,760	3.44	16.40
1898	65,165,133	229	79,611	18,230,919	3.57	25.34
1899	74,150,175	245	82,812	20,288,940	3.66	29.67
1900	79,842,826	242	92,692	22,431,464	3.56	33.65

Bituminous coal mining—Continued.

ILLINOIS.[1]

Year.	Output.	Average days active.	Average number employed.	Total days worked.	Average output per day.	Per cent mined by machines
	Short tons.				*Short tons.*	
1894	16,429,032	183.1	35,398	6,481,527	2.53	.....
1895	17,026,429	182.2	35,539	6,475,315	2.63	.....
1896	18,996,160	186.0	34,069	6,336,915	3.00	19.57
1897	19,365,847	185.5	31,084	5,766,260	3.36	19.66
1898	17,855,327	174.7	32,223	5,629,518	3.17	18.36
1899	22,497,067	205.7	34,031	7,000,324	3.21	24.90
1900	24,147,771	214.0	36,233	7,753,921	3.11	19.73
UTAH.						
1894	431,550	199	671	134,329	3.21	.....
1895	471,886	208	670	136,010	3.47	.....
1896	418,627	202	679	137,158	3.05	0.18
1897	521,560	204	704	143,616	3.62	.....
1898	593,709	243	739	179,577	3.30	.....
1899	786,049	265	743	196,895	3.99	.....
1900	1,147,027	248	1,308	324,384	3.54	.....

[1] Figures used for Illinois cover 92 per cent of total employees and 96 per cent of total output for all years, this being the proportion belonging to shipping mines.

While the 8-hour day was not introduced universally in the bituminous mines in 1897, it applied to more than half of the output of the entire country. From this table it can be seen that during the two years 1895 and 1896, under the 10-hour system, the average output per workingman per day was 2.9 and 2.72 tons; while in 1897, during the latter three months of which the 8-hour day prevailed, the average output per man was 3.03 tons per day; and for 1898, 1899, and 1900, three years of the 8-hour day in the majority of the coal mines, the average output ranged from 2.98 to 3.09 tons. Each year of the 8-hour day shows for the country as a whole a larger output per day for each workman than the highest output of the 10-hour day. The table also shows the increase in the use of machinery already referred to.

Individual States, where there has been a great increase in machinery, and where since 1897 the 8-hour day is universal, such as Ohio and Pennsylvania, show an increased output per day per man, as will be seen by the same table. There is one State, Illinois, where the proportion of coal mined by machines has remained fairly constant, standing at 19.57 per cent in 1896, increasing to 24.9 per cent in 1899, and falling to 19.73 per cent in 1900. The table shows that in this State the highest output per day for each workman was in 1897, when it reached 3.36 tons. This was a year operated partly under 10 hours and partly under 8 hours. Comparing the two 10-hour years, 1895 and 1896, with the three 8-hour years, 1898, 1899, and 1900, it can be seen that the output for each working day has considerably increased, the 10-hour years showing an average output per day for each employee of 2.53 to 3 tons, while the 8-hour years show an average of 3.11 to 3.21 tons. This must be ascribed solely to the increased

energy and promptness of the workmen, since, as already stated, the proportion of coal mined by machinery in that State has remained constant.

In the case of Utah, where the law went into effect in June, 1896, it will be seen that there is for the four complete years of the 8-hour day, 1897 to 1900, an actual increase in the output per day above the figures for 1894, and that 3 of the 4 years show an increase above the output for 1895.

These tables bring statistical evidence to support the testimony of witnesses before the Industrial Commission that in the industry of coal mining the shorter working day has increased the efficiency of both the workman and the management. This being so, it follows that the shorter working day has not increased the amount of employment of miners, and that the increase which has actually occurred in the number of days worked is to be ascribed solely to the improved industrial condition of the country, and not to the reduction of hours. It is true, as stated by one witness, that the shorter working day makes it possible for the individual workman, under such arduous conditions as those of smelting works, to work a larger number of days each month. In the smelting works in Utah, already referred to, the men were able to work under the 12-hour system only an average of 24 days a month, but with the shorter hours they were able to increase their average number of days to nearly 30. Plainly a change of this kind, to the extent that the workman is able to put in more time, does not widen the opportunities for the absorption of the unemployed. On the other hand, the fact that the operation of the smelting furnaces can not be greatly speeded up, does increase the number of employees required for a given output, though not proportionately to the decrease in hours.

ADVANTAGES OF SHORTER WORKING DAY.

On the side of the working population there can be no question respecting the desirability of fewer hours, from every standpoint. They gain not only in health, but also in intelligence, morality, temperance, and preparation for citizenship. Even in those cases where machinery has not increased the intensity of exertion, a long workday with the machine, especially where work is greatly specialized, in many cases reduces the grade of intelligence. The old hand-work shops were schools of debate and discussion, and they are so at the present time where they survive in country districts; but the factory imposes silence and discipline for all except the highest. Long workdays under such conditions tend to inertia and dissipation when the day's work is done. Lessening of hours leaves more opportunity and more vigor for the betterment of character, the improvement of the home, and for studying the problems of citizenship. For these reasons the short workday for working people brings an advantage to the entire community.

Of course, hours might possibly be conceived to be reduced to the point where the increased cost of production would overbalance these gains. If it were a question of reducing hours to absurdly low limits, nothing could be said in favor of the movement; but where—as is actually the case—the goal set up by the working people is the 8-hour day, and there is no proposition of any weight for a 5 or a 6 hour day, the arguments for reduction need no qualification from the standpoint of the workers and little from that of employers.

Furthermore, a reduction of hours is not accompanied by a permanent reduction in the daily rates of pay. Doubtless it is good policy for labor organizations, in demanding a reduction of hours, to concede a temporary reduction in the rate of pay per day, which might be consistent with an increase in the rate per hour. The granite cutters adopted this plan, and when their hours were reduced from 10 to 9 they accepted a drop of 25 cents a day in wages. One year later they regained the wages of the 10-hour day. Again they dropped 25 cents in order to get the 8-hour day, and in another year they regained the 25 cents. A reduction of hours is the most substantial and permanent gain which labor can secure. In times of depression employers are often forced to reduce wages, but very seldom do they, under such circumstances, increase the hours of labor. The temptation to increase hours comes in times of prosperity and business activity, when the employer sees opportunity for increasing his output and profits by means of overtime. This distinction is of great importance. The demand for increased hours comes at a time when labor is strongest to resist, and the demand for lower wages comes at a time when labor is weakest. A gain in wages can readily be offset by secret agreements and evasions, where individual workmen agree to work below the scale; but a reduction of hours is an open and visible gain, and there can be no secret evasion. Having once secured the shorter working day, the question of wages can be adjusted from time to time according to the stress of the market.

Respecting the proposed extension of the 8-hour workday to all manufacturing and mining industries, the experience of the Australasian colonies indicates that it is practicable, provided it be gradually brought about. True, as regards the resulting cost of production, the reduction would have different effects in different occupations. In some cases the 8-hour day would at first increase the cost, while in others there would be no increase. From the immediate standpoint of the employer it might seem that the hours should not be reduced in those occupations where cost would be increased, but that a concession of fewer hours might be made to the workmen in those occupations where cost would not be increased. A discrimination of this kind would require a minute investigation of all industries, and in the end would not be conclusive, since the question of reduction of hours usually turns not on an inquiry into costs, but upon the economic

strength of the labor interest or upon the health requirements of the employees. In all cases where reductions have been brought about there have been strenuous objections and alarming predictions, but after a very brief period of trial these objections have disappeared, except where lack of uniformity remains a ground of complaint; and employer and employee, with this exception, alike have agreed upon the advantages of the change. On the other hand, there is a reason for avoiding a hard and fast standard of hours for all trades in the fact that the physical and mental exhaustion and the hygienic surroundings are different. The more injurious occupations call for a greater reduction in the number of hours than the less injurious ones, and this, as will be shown later, is the true basis on which the reduction of hours by legislation should be based.

FOREIGN COMPETITION AND REDUCTION IN HOURS.

Lack of uniformity in the hours of labor is burdensome only to those employers who are in the same competitive field. This may be a very limited field, as in the building trades, or it may cover the entire area of the United States, as in most manufacturing industries, or it may reach to foreign lands. Competition with foreign manufacturers, where the hours are longer, is often advanced as an argument against reduction of hours in American industries. A manufacturer of machinery[1] contends that foreign competition, especially with Germany and Belgium, where men work at a small rate of wages and turn out good material during a long workday, makes it impossible to reduce the hours from 10 to 9 in this country. His objection is based upon the large amount of capital invested in machinery which he can not afford to keep idle a tenth of the normal time. At the present time, the industries of the United States stand well toward the front in the movement for fewer hours, being only less advanced than Great Britain and the colonies of Australasia. While it is impossible to state concisely for different countries the average hours of labor, it is possible to compare countries as regards what might be designated as the prevailing hours in the industries engaged in international competition. From the standpoint of competition, the 8-hour day in Australia has little significance, since the industries of those colonies which affect the world's market are mainly agriculture and stock raising. Great Britain, however, is our severest industrial competitor, with the exception, in some industries, of France and Germany. At the present time in Great Britain, in factories, the hours of work per week are quite generally 53; that is, 9½ hours a day, with a Saturday half holiday. The miners have for some years enjoyed a workday not exceeding 8 hours. Compared with Great Britain, therefore, the United States, with the prevailing average of about 9½ hours a

[1] Reports Industrial Commission, Vol. VIII, p. 7.

day, or 57 a week,[1] has not yet reached the point where foreign competition can be said to be an important consideration as regards further reduction of hours. The recent reduction in the machinery industries to 9 hours per day brings this country more nearly to the level which Great Britain has held in that industry for 30 years; but in other large industries, like that of textiles, there still remains a difference of 5 hours in Massachusetts to 15 hours in the South in excess of the working week of the British workman. On the continent of Europe the workday is longer than in either Great Britain or the United States, ranging from 10 to 12 a day in Germany; 8 to 13¼ in Hungary; 10 to 12 in Spain; 14 to 16 in Russia (except in iron and steel works, where in some occupations the 8-hour day prevails), and 11 in Austria. Yet these countries, with their long workdays, are less able to compete with the United States than Great Britain. A reduction to 9 hours per day in this country would be necessary in order to reach the British level. A further reduction below 9 hours would be necessary in order to subject American industries to a disadvantage in competition with British manufacturers, who, at present, are their strongest foreign competitors.

While foreign competition is a matter of moment in considering the reduction of hours in American industries, it is questionable whether it has really as great weight as the competition of different States in the American Union among themselves. There is one advantage which the American workmen have in the matter of foreign competition which does not hold in respect to the more backward States of the American Union, viz, the protective tariff. Whereas a single State with advanced labor legislation can not protect itself against the cheap labor and long workday of another State, the entire Union is able, through the protective tariff, to restrict the competition of the longer workdays and lower wages of European and Asiatic labor, and to make it possible to raise the level of wages and to reduce the limit of hours to the furthest extent that domestic competition will permit. It is possible, indeed, that an extreme reduction of hours, while not a menace to American industry from the side of the importation of cheap products, might nevertheless restrict the sales of American products abroad in competition with foreign products. While the extension of our foreign trade is a matter to be cultivated and promoted, it does not follow that this should be encouraged if it requires low wages and a long workday for American workmen. Indeed, such progress as has already been made in the development of foreign trade has been made in spite of higher wages in this country, and as a result of the cheaper cost of production which has followed upon the possession of a more intelligent, better paid, and more energetic class of labor. The industries where the highest wages and fewest hours prevail, are those in which

[1] Testimony of Mr. Gompers, Reports Industrial Commission, Vol. VII, p. 622.

the United States excels in marketing its products in foreign markets. A further reduction in hours will increase the efficiency of this labor and raise its intelligence; and with the home market protected against the invasion of foreign products, a fair field is maintained for a still further improvement of the character of American labor through additional reductions of hours.

SHORTER WORKDAYS THROUGH LABOR ORGANIZATION.

In the absence of legislation, the only effective means of securing a reduction of hours is through labor organization. This is, of course, the method by which the most significant and important reductions in recent years in the United States have been secured. The concentration of effort on this point, by the American Federation of Labor, for the past 15 years, has already accomplished notable results. The general effort, beginning in 1886, is believed to have reduced the day's labor of the working people of the United States by fully one hour. Where the hours had been 12, they were reduced to 11; where they had been 11, they were reduced to 10.[1]

The cigar makers were the first organization to secure an extensive adoption of the 8-hour day, and their success dated from May, 1886. A special reason for the strength of the union in this trade lies in the possession of the cigar makers' label, which has made it possible for union men to secure higher prices for their products than those secured by nonlabel workers. It is not maintained by the representatives of this union that the shorter workday in their craft is followed by a corresponding increase in the output per hour, and indeed the reduction in hours is advocated mainly as a means of distributing employment more regularly and of absorbing the unemployed.

In the building trades the great majority of the workmen in the local trades councils have secured the 8-hour day. There does not seem to be any reason in the nature of their work why they should prefer fewer hours than prevail in other trades. Theirs is a seasonal trade, and it would seem that the motive to work excessively in the busy season, in order to earn money enough to tide them over the winter's idleness, would be as strong as it is in the case of the longshoremen and the clothing makers. Neither is their work as trying as indoor work; yet the members of their organizations who work in shops do not, as a rule, have the 8-hour day. The explanation in general is found in the strength of the labor organizations and the large numbers of contractors, often of relatively small economic power, for whom they work. In the case of indoor work the factories are in the hands of corporations, and it is more difficult to secure reduction of hours in dealing with the large manufacturers than with the small employers.

[1] Reports Industrial Commission, Vol. VII, p. 623.

The hours of window-glass blowers are 40 a week in the blowing department, although they are more in other departments. The reasons advanced by the representative of the union for this short time is that the men produce enough in that time for a fair week's work.[1] Window-glass cutters have a limit on the amount of work a man shall be permitted to do in a day, but as they are paid by the piece and are permitted to quit work as soon as they have completed their task, the hours vary widely, averaging not more than ten.

The brewery business is one requiring continuous attention, and it was formerly believed that the 8-hour day was impracticable. The men were working 12 hours in two shifts; but through the strength of their organization the hours have been reduced to 8 in three shifts, without any injury to the industry.[2]

The workdays of 'longshoremen, prior to their organization, along the Great Lakes, were irregular and long on the average. They often worked as long as 24 and sometimes 36 hours at a stretch. Through the influence of their association this system has been wiped out and the hours of labor have been materially reduced. On the lakes the men work from 10 to 12 hours; on the coast rather longer. The season is a short one, not over 8 months at the most, and, with the keen competition of the railroads that run parallel with the lakes, it is essential that vessels be given the best dispatch possible. If the work were more steady the men would favor a still shorter workday. Under the conditions existing, however, the 8-hour day is not possible, or even thought of by the members of the association.

The reports of the New York bureau of labor statistics since 1891 have contained complete investigations of the hours of labor of organized workmen in that State. The following summary, prepared by the commissioner,[3] shows the changes in the hours which have taken place:

The number of employees fluctuated between 186,003 in 1891 and 407,235 in 1899—a growth partly natural and partly due to an increasing number of establishments reporting. The results may be summarized as follows:

Proportion of employees working the specified hours per day, 1891 to 1899.

	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.
	Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
8 hours or less	9.3	9.0	10.7	14.4	11.9	9.4	9.7	8.2	8.1
9 hours	16.6	16.5	18.1	17.8	17.9	20.3	20.9	22.2	22.1
10 hours	72.2	72.5	69.2	65.1	67.9	66.6	65.5	65.8	66.1
Over 10 hours	1.9	2.0	2.0	2.7	2.3	3.7	3.9	3.8	3.7
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Reports Industrial Commission, Vol VII, p 44.

[2] Ibid., p 650.

[3] The data on which this summary is based are found in the report of the New York Bureau of Labor Statistics for 1900.

While the proportion of employees working 8 hours or less has slightly decreased and that of employees working more than 10 hours has slightly increased, the important change has been the growth of the 9-hour group at the expense of the 10-hour group; while, in 1891, 72.2 per cent of the employees were working 10 hours a day, in 1899 the proportion was only 66.1, and in the same period the percentage of 9-hour workers increased from 16.6 to 22.1 per cent. It is worthy of note that the proportion working short hours (not more than 8) increased temporarily in the years of depression (1893–1897).

Very considerable differences appear between New York City and the remaining portion of the State, thus:

	New York City.				Remainder of the State.			
	1896.	1897.	1898.	1899.	1896.	1897.	1898.	1899.
	Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
8 hours or less	12.6	13.7	12.3	13.1	6.8	6.5	4.9	4.1
9 hours	31.8	31.9	34.0	36.3	11.3	12.0	12.6	10.3
10 hours	53.1	51.3	50.6	48.0	77.2	77.0	78.0	81.0
Over 10 hours	2.5	3.1	3.1	2.6	4.7	4.5	4.5	4.6
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Not only do the proportions in the two parts of the State differ in each year, but the tendencies throughout the period are different. While in the metropolis the relative strength of the 10-hour group has diminished in favor of 9-hour work, in the interior towns the 10-hour day has been gaining upon the 9-hour and 8-hour days. In 1899 almost exactly one-half of the employees of metropolitan establishments worked 9 hours a day or less, while the corresponding percentage for the remainder of the State was 14.4. The differences, moreover, exist in nearly every industry.

The contrasts in each group are decidedly noticeable and furnish a conspicuous illustration of the power of organized labor. Although some industries are not strongly organized in New York City—as textiles, for example—the very fact that 8 or 9 hours is accepted as the limit of their day's toil by the leading workingmen of that city has a natural effect in establishing that as a part of the body of customs, traditions, and habits that go to make up the local standard of life. The figures for Group XII, the building industry, are especially significant; they show that 90 per cent of the New York City work people in those trades work less than 58 hours a week, or 9½ hours a day, as compared with 50 per cent in the other towns of the State.

Returning now to the figures for the entire State for the earliest and latest years of the period 1891 and 1899, we may note that some industries have not shared in the progressive shortening of hours confirmed in the first table.

Percentage of employees of manufacturing establishments in New York State working the specified number of hours daily in June, 1891 and 1899.

	Group I. Stone, pottery, glass.		Group II. Metals, machinery, etc.		Group III. Wood.		Group IV. Leather, rubber, etc.	
	1891.	1899.	1891.	1899.	1891.	1899.	1891.	1899.
8 hours or less	10.6	16.4	4.2	4.8	0.8	4.4	6.6	1.8
9 hours	17.1	18.7	10.0	15.7	18.7	16.5	23.8	16.1
10 hours	65.3	58.7	84.8	76.9	79.5	76.5	69.5	82.0
Over 10 hours	7.0	6.2	1.0	2.6	1.0	2.2	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Percentage of employees of manufacturing establishments in New York State working the specified number of hours daily in June, 1891 and 1899—Continued.

	Group V. Chemicals, oils, etc.		Group VI. Pulp and paper.		Group VII. Printing and publishing.		Group VIII. Textiles.	
	1891.	1899.	1891.	1899.	1891.	1899.	1891.	1899.
8 hours or less	8.9	6.5	1.7	0.1	7.7	12.8	4.7	3.1
9 hours	25.0	15.3	4.1	0.1	22.2	53.9	8.9	10.5
10 hours	59.2	72.5	65.5	66.3	70.0	32.9	86.3	85.5
Over 10 hours	6.9	5.7	28.7	33.5	0.1	0.4	0.1	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

	Group IX. Clothing, millinery, etc.		Group X. Food, tobacco, liquors.		Group XI. Public utilities.		Group XII. Building.	
	1891.	1899.	1891.	1899.	1891.	1899.	1891.	1899.
8 hours or less	10.8	8.4	36.3	13.5	3.1	12.4	33.9	54.4
9 hours	35.3	41.3	17.3	16.8	2.6	1.4	32.6	28.1
10 hours	53.8	50.2	42.0	61.7	75.5	44.2	33.4	21.6
Over 10 hours	0.1	0.1	4.4	8.0	18.8	42.0	0.1	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

There has been an increase in the average working time in the boot and shoe industry (Group IV), in the manufacture of chemicals and refining of petroleum (Group V), in the paper-making industry, etc. A similar increase in Group X is partly due to the fact that bakeries and breweries, with comparatively long hours, were more strongly represented in 1899 than in 1891, while the reports of cigar factories, with their shorter hours, showed a relatively small increase in the number of employees. One of the noteworthy changes, in the way of reduction of hours, appears in the printing and publishing industry; whereas 70.1 per cent of the printers worked 10 hours or more in 1891, only 33.3 per cent had those hours in 1899—and that was before the general 9-hour day was established by agreement between national associations of employers and employees.

It will be noticed that 9,667 employees (2.4 per cent of the aggregate number) were reported in 1899 as working regularly more than 70 hours a week. Of these, 2,153 were workmen in paper mills, a large proportion of which have for several years past been operated 24 hours a day or 72 a week. A large proportion of the employees of gas companies also work in two shifts of 12 hours each, and the same may be said of stationary engineers and firemen, who are found in nearly all industries, but are especially numerous in breweries. Finally, a considerable number of employees of railway car shops work 7 days in the week, thus aggregating 70, 77, or even 84 hours a week.

The movement of the Federation of Labor for fewer hours was in abeyance for a number of years, but within the last three or four years has been vigorously renewed, and within that period such industries as those of the machinists and the miners have secured quite generally the 9-hour or the 8-hour day. There is no effort of labor organizations more necessary, nor one in which they have more generous sympathy from the public, than this effort to secure a reduction of hours. Their demand for a shorter workday is peculiarly strong where, as is generally the case at the present time, they forego their

demand for restrictions on output, and permit the employer to have a free hand in the management of his business. Reduction of hours is the concession to which they are entitled in return for the increased exertion which they concede in removing all restrictions on output and machinery.

LEGISLATION GOVERNING HOURS OF LABOR.

While the efforts of labor organizations in behalf of reasonable reduction of hours are in general to be commended, it is plain that they can not be expected to reach all classes of labor, nor indeed those most in need of protection in this regard. It has been estimated that labor unions include only 10 or 15 per cent of the wage-earning population. They do not include, to any great extent, women and children, who in 1890 constituted 20 per cent of the employees in manufactures, and who, on account of physical weakness or immature years, stand in greatest need of reasonable hours. Even those organizations which are able to secure the shorter working day are handicapped in competition with establishments where nonunion labor prevails. In an industry whose products are sold throughout the country, other conditions being also equal, uniform hours and wages are essential in order to place manufacturers on the same competitive level. The stability of the 8-hour day among the mine workers depends on the extensive organization of labor in that industry. The chief reason why the building trades have been able so extensively to secure the 8-hour day is that they are not subjected to interstate competition, and are able, therefore, to reduce the hours in one locality without driving trade to other localities. These favorable conditions are absent from the great majority of the working population.

Legislative regulation of the hours of labor, from any point of view, must be considered as supplementary to regulation by private contract and labor organization, where these methods fail and where there is evident reason for the reduction. In England and in America it has generally been held that legislation reducing the number of working hours should apply only to women and minors, and not to men. The latter have been held to be better able to care for themselves and to secure, through organization or otherwise, the improved conditions which they demand. But women and children have been considered weaker in bargaining and more in need of legislative protection. There is a tendency in both countries, however, to depart from this view and to legislate for men as well as women in the regulation of hours. While such legislation has not as yet been actually enacted in England, it has been adopted in Utah and Wyoming in the case of miners and smelters. With these two exceptions, the legislation of American States, reducing the hours of labor, applies only to women and minors. Where men work in the same factories they

generally get the advantage of the shorter workday of the women and children, although this is not always so.

The problem of legislative regulation turns upon three questions: First, practicability; second, constitutionality; third, uniformity.

1. Practicability.—Legislation respecting hours of labor stands upon an entirely different footing from legislation respecting wages. It is practically impossible to devise any legislation which will effectively maintain a minimum rate of wages for any occupation, or for the country at large, even should legislative interference of this kind seem advisable. Secret evasion would quickly nullify such a law. But legislation setting a maximum to the number of hours of employment can be so framed and administered as to prevent evasion. It must be observed, however, that reliance can not be placed upon prosecution of the employer by the employee. The latter is in a dependent position, and the implied threat of discharge is too heavy a penalty to pay for a doubtful victory in a legal prosecution. Such a prosecution is possible only where the employee is backed by a strong labor organization; and a labor organization strong enough to prosecute an employer under State laws is strong enough to secure its demands without the State law. Legislation is needed only where organization fails. This being so, legislation concerning hours requires the creation of a strong force of factory inspectors. The factory inspector is the public prosecutor of violations of factory laws. The simple provision existing in the laws of Massachusetts, New York, and other States, requiring that the employer shall post in his factory the hours for beginning and quitting work and the interval for the noonday meal, and providing penalties where this notice is not posted, makes it possible for the inspector to discover by his own inspection whether the shop is working overtime or not. With this simple provision, a factory working outside the posted hours is prima facie violating the law, and it is not necessary that the factory inspector should call in the employees as witnesses and subject them to the danger of discharge. The inspector, like a police officer, becomes his own witness, with the most conclusive of testimony. Where the legislation respecting hours is evaded, as it undoubtedly is in some cases in New York and other States, it will be found that the defect lies chiefly in the failure to enforce the provision requiring the posting of hours and in the necessity of summoning the employees as witnesses. Sometimes this failure is excused on the ground that the requirement is a mere technicality, and that it would be a petty persecution on the part of the inspector to prosecute for every trifling detail; but, in the enforcement of a law of this kind, this particular technicality is all-important; and if it is intended to enforce the law at all, the posting of the hours is an essential condition of success.

In some occupations, like the manufacture of clothing and notions,

it is often possible to evade the short-hour legislation by requiring employees to take work home at night, and where they are not organized they are afraid to refuse. To meet this evasion the provisions in the law of Massachusetts and other States requiring all home workers to have a license, and requiring also that the employer furnish to the factory inspector a list of all his home workers, is the most effective device yet enacted into law. The inspector refuses to grant licenses for home work to those who work in the daytime in the factory, on the ground that they are already working the legal limit, and that to take work home at night would be an evasion of the law. Consequently the inspector, in case of violation, prosecutes the employer, not directly for sending work home at night, but for furnishing work to unlicensed home workers. A prosecution on the former account would require testimony of the home worker, and would result inevitably in connivance and evasion. A prosecution on the latter account requires only careful inspection on the part of the officer.

The foregoing technical details are noticed to show the practicability of legislation for factories and mines regarding hours of labor. It does not follow that such legislation will be practicable for farm labor or for home workers. Its success depends upon the existence of establishments separate from the home. Indeed, legislation of this character is justified mainly by the existence of the factory system, the increased intensity of exertion, the injury to the health of the worker, and the greater profitableness of labor which that system has introduced.

2. Constitutionality.—Legislation restricting the hours of labor has been overthrown by the courts in many States on the ground of unconstitutionality; and undoubtedly this is the main obstacle in the way of enacting such statutes. The ground on which these decisions are rendered is their interference with freedom of contract and with the free exercise of one's powers, or with the free acquisition of property. Such laws as have been sustained have been justified on the ground of the preeminence of the police power of the State; but the proper extension of the police power is viewed differently by different courts. Regarding the nature of the police power in itself there is no difference of opinion; it is supreme wherever reasonably applicable, and may be invoked to restrict or limit the freedom of contract; but as to its extent there are differences of legal opinion. It includes the protection of the health, safety, morals, and welfare of the public. These objects are indeed broad, and might apparently on their face justify many kinds of interference. The main point of difference in the decisions of the courts respecting the question of hours is whether the police power extends only to the protection of the public at large, or whether it can also be invoked to protect the individual against himself, as when he is prohibited from making a contract which is injurious to himself. If it can be shown plainly that the regulation in a partic-

ular case is necessary and reasonable for the protection of the community, as for instance against contagious diseases, then the police power plainly includes the power of the legislature to prevent individuals from making such uses of their own property, or from making such contracts as would thus injure the community. Many courts have held that the police power can not be invoked to prohibit a person from taking industrial risks which imperil only himself and do not affect the community. This ruling, however, has not been applied in the case of the factory laws, which have been enacted by more than one-half of the States, with the object of protecting employees from dangerous machinery and unwholesome conditions of work. The leading decision on this point[1] holds that, while it is true that in the absence of a contract to the contrary the employee assumes the risk of his occupation, yet the legislature is not thereby restricted from lessening these risks through police regulations. The court denied the contention that—

> Neither the public welfare nor the public health is involved, inasmuch as the protection thought to be afforded is limited to the individual employee, who, by his contract of employment, signifies a willingness to use the machine in its dangerous condition, and therefore can not be heard to complain.

The court continues:

> A man may contract to use such machinery or to perform dangerous services, and have no remedy for injury; but we are not aware that the police power is limited by such contract. As between the parties themselves a contract may cut off legal redress for injuries sustained; but we are not satisfied that the authority of the State is limited to the protection of those who do not sustain contract relations with each other.

The court also intimates that in assuming these risks the employee is not altogether free, and his contract therefore does not come under those provisions which protect the freedom of contract. On this point it says:

> Laws of this class embrace provisions for the safety and welfare of those whom necessity may compel to submit to existing conditions involving hazards which they would otherwise be unwilling to assume.

The Supreme Court of the United States, in the Utah mining case, where the legislature restricted the hours of labor to eight, takes similar ground, and sets forth the inequality of bargaining power between the employer and employee as a justification of legislation protecting employees, even though they be adult males. It says:[2]

> The legislature has also recognized the fact, which the experience of legislatures in many States has corroborated, that the proprietors of these establishments and their operatives do not stand upon an equality, and that their interests are, to a certain extent, conflicting. The former naturally desire to obtain as much labor as possible from their employees, while the latter are often induced, by the fear of discharge, to conform to regulations which their judgment, fairly exercised, would pronounce to be

[1] People *v.* Smith, 66 N. W. Rep. (Mich.), p. 382.
[2] Holden *v.* Hardy, 18 Sup. Ct. Rep., 383.

detrimental to their health or strength. In other words, the proprietors lay down the rules and the laborers are practically constrained to obey them. In such case self-interest is often an unsafe guide, and the legislature may properly impose its authority. It may not be improper to suggest in this connection that although the prosecution in this case was against the employer of labor, who apparently, under the statute, is the only one liable, his defense is not that his right to contract has been infringed upon, but that the act works a peculiar hardship to his employees, whose right to labor as long as they please is alleged to be thereby violated. The argument would certainly come with better grace and cogency from the latter class. But the fact that both parties are of full age and competent to contract does not necessarily deprive the State of the power to interfere where the parties do not stand upon an equality, or where the public health demands that one party to the contract shall be protected against himself. The State still retains an interest in his welfare, however reckless he may be. The whole is no greater than the sum of all the parts, and when the individual health, safety, and welfare are sacrificed or neglected the State must suffer.

It will be noticed in the foregoing decision that the court sustained that view of short-hour legislation which holds that in protecting the employee, the State is protecting the community at large; and that the police power can be invoked, not merely to prevent an individual from using his freedom in such a way as to injure others, but also to prevent him from using his alleged freedom in such a way as to injure himself.

Prior to the enactment of the Utah legislation above referred to, the enactments of different States extended only to the protection of minors and women. The protection of minors is plainly justified by the lack of full legal rights and their inability legally to enter into any contract whatever. In the case of adult women, the police power is invoked, not on the ground that they do not enjoy freedom of contract, but on the ground that the State is interested directly in their health. It was upon this ground that the earliest American law regulating the hours of women, namely, the 60-hour law of Massachusetts, enacted in 1874, was sustained. The court decided[1] that the legislature had power to provide that "in an employment which the legislature has evidently deemed to some extent injurious to health, no person shall be engaged in labor more than 10 hours a day, or 60 hours a week." Only one other ruling has been made on the subject, although fourteen other States restrict the hours of adult women in factories and the legislation has not been challenged. An opposite result was reached by the court in Illinois, which declared unconstitutional the 8-hour law applying to adult women in factories, on the ground that they were fully as competent as men to make their own contracts for work in any lawful occupation.[2]

The decision of the Supreme Court of the United States on the Utah mining law extending the principle of legislative protection to workingmen as well as women is so important for the guidance of legislatures

[1] 120 Mass., 384. [2] Ritchie *v.* People, 155 Ill., 98.

and courts in enactments of this kind that the grounds of the decision should be clearly understood. The Supreme Court holds in substance that a State law reasonably calculated to protect employees in dangerous or unwholesome occupations, by means of a reduction of the hours during which they are permitted to work under such conditions, is not in conflict with the fourteenth amendment of the Constitution of the United States, for the reason that it neither abridges the privileges or immunities of the citizens of the United States, nor deprives either the employer or the employee of his property without due process of law, nor denies to them the equal protection of the laws. The court noticed that the police power of the States has been greatly extended during the present century, on account of the enormous increase in the number of occupations which are dangerous or so far detrimental to health as to demand special precautions for the well-being and protection of employees or the safety of adjacent property, and that while "the police power can not be put forward as an excuse for unjust or oppressive legislation, it may lawfully be resorted to for the purpose of preserving the public health and safety or morals, or the abatement of public nuisances; and a large discretion is necessarily vested in the legislature to determine not only what the interests of the public require, but what measures are necessary for the protection of such interests."

The court concurred in the following observation of the supreme court of Utah:

> Poisonous gases, dust, and impalpable substances arise and float in the air in stamp mills, smelters, and other works in which ores containing metals, combined with arsenic or other poisonous elements or agencies, are treated, reduced and refined, and there can be no doubt that prolonged effort, day after day, subject to such conditions and agencies, will produce morbid, noxious, and often deadly effects in the human system. Some organisms and systems will resist and endure such conditions and effects longer than others. It may be said that labor in such conditions must be performed. Granting that, the period of labor each day should be of reasonable length. Twelve hours per day would be less injurious than 14, 10 than 12, and 8 than 10. The legislature has named 8. Such a period was deemed reasonable.

Respecting the control which the fourteenth amendment to the Constitution of the United States imposes upon State legislation, the Supreme Court affirms that the science of law is to a certain extent a progressive one, and that the Constitution of the United States, "which is necessarily and to a large extent inflexible, and exceedingly difficult of amendment, should not be so construed as to deprive the States of the power to so amend their laws to make them conform to the wishes of the citizens, as they may deem best for the public welfare, without bringing them into conflict with the supreme law of the land;" and this need of revision of laws grows out of new conditions of society as they arise, and "particularly the new relations between employers and employees."

This decision of the Supreme Court of the United States makes it plain that State legislatures are competent, so far as the constitution of the United States goes, to regulate the hours of labor in any occupation, or for any class of employees, where it can be shown that the occupation is injurious to health, and that the proposed reduction of hours is not excessive and unreasonable.

At the same time, it must be noted that State constitutions are supreme over State legislatures, and that these constitutions, under the decisions of the several State courts, differ widely in the restrictions which they place on the legislative body. The supreme court of Colorado in 1899,[1] in passing upon a Colorado statute identical with that of Utah, held that the Utah constitution contained a mandatory provision, namely, that "the legislature shall pass laws to provide for the health and safety of employees in factories, smelters, and mines," and seemed to intimate that it would require such a clause in the Colorado constitution to authorize a law limiting the freedom of contract of such employees. It held that, notwithstanding the decision of the Supreme Court of the United States, the police power of the legislature of Colorado does not extend to the protection of an employee against himself in making a contract for employment. It is to be noted, however, that neither the Utah court nor the Supreme Court of the United States based its decisions on the mandatory clause of the Utah constitution, but upon the police power of the State.[2] The conclusion to be drawn is that, so far as the Constitution of the United States is concerned, State legislatures are competent to reduce, by law, the hours of labor in dangerous or unwholesome occupations, and that the constitutionality of such legislation under the several State constitutions will naturally be decided differently; but that in any case the people of each State have the remedy in their own hands, through a proper amendment of their constitution, similar to that of Utah.

The basis of these decisions is not the need of the working people for fewer hours in order that they may have more leisure in general, but simply the injury imposed by the occupation upon their health. This of course is a broad position and is indefinite in extent. Legislation regulating the hours of women applies to all factories, and often in practice makes it necessary for employers to fix the same hours for men in the same establishments. While it is doubtless true that in many occupations excessive hours are injurious to the health of men as well as women, conditions differ greatly in different industries, or even in different establishments in the same industry. Legislation, therefore, upon this subject can not be general, but must be based upon accurate investigation of the conditions in the several industries. The Industrial Commission has taken testimony regarding the evil effects of

[1] In re Morgan, 46 Pac. Rep., 756.

[2] 46 Pac. Rep., 761; 18 Sup. Ct. Rep., 383.

long workdays in various trades, but has not been able to follow this line of inquiry to the extent that its importance requires. A field investigation of injurious occupations might properly be undertaken by the United States Department of Labor, and for that purpose the Department should be provided with adequate funds. The investigation should cover the leading industries of the country, and should include the employment of women, children and men, the number of hours worked in different parts of the country and in foreign countries. The Department should be able to employ such medical and technical experts and to make such medical and chemical tests as the nature of the inquiry suggests. Such an investigation might determine the ages of employees in such establishments, the length of time they had worked at the trade, the number of days lost on account of sickness, and the character of the sickness. An investigation of this kind, conducted by expert authorities, would prove the most valuable contribution which could be made to the scientific and just action of the several States in the important matter of regulating the hours of labor.

In line with the preceding observations it may be noted that in Great Britain the factory and workshop act of 1901 authorizes the secretary of state, when he is satisfied, upon investigation, that any process or mechanical arrangement is dangerous, to draw up a draft of regulations prohibiting or limiting the employment of persons and prohibiting or controlling the use of any material or process. The law applies to factories, workshops, and tenement workshops.

3. Uniformity.—The serious defect in legislation regulating the hours of labor in factories is found in the lack of uniformity in the different States. Massachusetts has established the 58-hour week for women and children in factories. The adjoining State of New York places the limit at 60 hours; New Jersey at 55 hours; Pennsylvania at 60 hours; Wisconsin, 48 hours, but permitting contracts for overtime; South Carolina and Georgia, 66 hours; others at 60 hours a week. There are 22 States that have no restrictions for adult women, 18 that have no restrictions for women under 21, and 17 that have no restrictions on male minors. Utah and Wyoming are the only States that limit the hours of men, and this applies only to workers in smelters and under-ground mines.[1]

While it is doubtless true that, within limits, the fewer hours of one State do not place that State at a disadvantage, owing to the greater energy which fewer hours make possible, yet a further reduction by law from the 58 hours of Massachusetts, or the 55 hours of New Jersey to, say, 48 hours, as is the case in Australia, seems exceedingly difficult to bring about as long as other States retain a maximum as high as 60 or 66 hours, and still other States have no restrictions whatever. A greater degree of uniformity of legislation on this point

[1] Reports Industrial Commission, Vol. V, p. 50.

is an urgent requirement. After an experience of seventy years in England and nearly thirty years in Massachusetts, together with the more recent experience of twenty other American States, legislation reducing the hours of women and minors in factories has justified itself as a proper action for any civilized state. It is true that local differences exist in the climate and other conditions, but these should not be considered decisive. Those States which are just now advancing to the position of manufacturing communities might well learn from these examples the lesson that permanent industrial progress can not be built upon the physical exhaustion of women and children. Factory life brings incidentally new and depressing effects which those whose experience has been wholly agricultural do not appreciate. But the experience of States which have pushed their way from agricultural to manufacturing industries, and have found that their delay in protecting their factory employees has weakened the physical and moral strength of the new generation of working people, would seem to be an experience which the citizens of new manufacturing States would hope to avoid. A reduction in hours has never lessened the working people's ability to compete in the markets of the world. States with shorter workdays actually manufacture their products at a lower cost than States with longer workdays. Several witnesses before the Industrial Commission, both manufacturers and employees, have urged a national law reducing the hours of women and children in factories to a uniform standard. There is evidence that the demand for such a law is growing in strength. But Federal legislation, with the attendant force of Federal factory inspectors, is objectionable. Other countries, even Germany, with its federal form of government, have uniform factory laws covering all parts of the land; but it has been the pride of the American Commonwealth that, except in great emergency, no State should be coerced to do that which is either for its own interest or for the interest of other States. This principle is sound, but it can not be overlooked that those States which profit by their strategic position to hold their sister States below the level of humane self-protection demanded by modern factory conditions, are storing up against themselves feelings of resentment and retaliation. It is certainly practicable for any State to bring its hours of labor for women and children in factories down to the standard of 55, set by New Jersey. This standard is near that of our principal competitor, Great Britain. This, at least for the present, should be the standard adopted on its own initiative by every State that enters the ranks of factory production.

FEDERAL LEGISLATION.

While in manufactures and mining the regulation of hours belongs to the several States, yet in transportation the interstate character of the industry brings the subject under the powers of Congress. The

policy of Congressional action depends upon the need of protecting the traveling public and freight traffic, and the inability of certain classes of employees to organize for their own protection. On account of the nature of train service the hours of railroad employees are necessarily irregular. A certain distance must be covered before the train crew can be released, and the time required may be short, or, under exceptional circumstances, may be exceedingly long. There is, however, a very general tendency of railroad management to bring the hours of trainmen into reasonable limits, and the 10-hour day is the ideal standard established by agreement for such service. The principal motive actuating the management is the necessity that the trainmen should be wide-awake, and this acts as a protection against unreasonable demands; at the same time, prior to the organization of the railroad unions the workday was much longer than at present. Even now, in the case of the unorganized switchmen, telegraphers, track men, and station men, the hours are frequently 12 a day, and, in some cases, from sunrise to sunset. During the summer, when days are long, trackmen work 14 hours on many roads. In emergencies all of these employees are also required to remain on duty much longer than 12 hours.

While it is true that the trainmen are especially responsible for the safety of the traveling public, it is also true, as stated by the president of a leading railroad,[1] that "of the 20,000 names on our pay roll you could pick out very few who do not carry the lives of the passengers in their hands." Telegraph operators occupy a peculiarly responsible position in traffic operations, and it is no uncommon thing for a coroner's jury to ascribe the cause of a railroad wreck to the negligence of a telegraph operator who had been on duty for an excessive number of hours. Railway trackmen are the poorest paid and hardest worked of all employees. They handle heavy material, such as cross-ties and steel rails, and even heavy cars. Both on their own account and on account of the safety of the traveling public, the hours of labor of these unorganized classes of railway employees should be reduced to eight.

The legislation of the several States affecting the hours of employees limits such hours to 10 or 12, and in five States contracts for a longer time are invalid, and a company so contracting is liable to a penalty.[2] The constitutionality of such statutes can now probably be sustained under the decision of the United States Supreme Court on the Utah mining law. Railroad labor, however, is undoubtedly covered by the interstate powers of Congress, and a Federal law regulating the hours of labor would be constitutional. The limitation of continuous runs by engineers or continuous service by telegraph operators or switchmen without a period of sufficient rest, as well as other regulations

[1] Reports Industrial Commission, Vol. IV, p. 288.
[2] Ibid., Vol. V, pp. 27, 28.

affecting the surroundings and dangers of the employment, are within the province of Congress. The Industrial Commission has recommended that Congress enact a code covering all the conditions of employment of railroad labor throughout the United States. Such a code would have the advantage of simplifying the conditions throughout the country, and, by the force of example, would lead the States, it is hoped, to voluntarily adopt the code in cases where Congress can not properly interfere. This the Commission believes to be one of the most important efforts in the labor interest to which the attention of Congress can possibly be invited.

SAILORS AND SEAMEN.

On the Great Lakes the hours of seamen are excessive, the men working 12 hours on the schooners, and as high as 30 hours at a stretch occasionally on the steamboats. This includes 24 hours of all kinds of labor, followed by 6 hours steering; they then get 6 hours rest, and again 6 hours at the wheel. These excessive hours are ascribed to the undermanning of the vessels, which, besides requiring many hours, is also unsafe for passengers and property. It is stated that in other countries men are required to stand at the wheel only 2 hours, with 4 hours off, while on the Lakes they are required to stand 6 hours, with 6 hours off, and this occurs very often, as stated above, after continuous work for 24 hours preceding.[1] Water transportation comes under the interstate commerce powers of Congress, and the regulation of hours and the requirement of adequate numbers in the crew are matters which Congress is fully competent to deal with.

HOURS OF LABOR ON PUBLIC WORKS AND PUBLIC CONTRACTS.

There is one phase of legislation affecting the hours of labor wherein the interests of private employment are not directly affected—namely, the hours of workmen employed directly by the Federal, State, and local governments. These different governments combined are undoubtedly the largest employers of labor in the United States, and whatever labor legislation is enacted affecting them has relatively important weight upon the condition of the working people in general. The Federal Government has been the pioneer in reducing the hours of labor of its employees. In 1840, at a time when in private employment 11 and 12 hours was the rule, an order of the President provided for 10 hours in all public employment; and again in 1868, after private employment had reached the standard of 10 hours, Congress reduced the hours for public employees to 8. Even this reduction does not place the manual laborer and artisan in the employment of

[1] Reports Industrial Commission, Vol. IX, pp. 403–408.

the Government on the same basis as the clerical and official force, for which the hours are but 6½ to 7½ a day.

State governments and city authorities have followed the Federal Government in the adoption of the 8-hour day. The first city to introduce this reduction was New York, in 1870. At the present time there are eight or nine States which prescribe the 8-hour day for all labor on public works, whether in the employment of the State or of the local divisions.

There are special reasons in Government employment whereby it is possible to advance more rapidly in the reduction of hours than is the case in private employment. The Government in the work which it conducts is not subject to foreign or domestic competition; its services are paid from taxes, and it is not compelled to dispose of its products at a market price. For this reason it is free to take broader views of its obligations to its employees than those taken by the private employer. Its action is determined more by the ethical and political standards of the public than by the competitive conditions of industry. In this way the Government is able to stand before the industries of the country as a model employer. Undoubtedly the example of the 10-hour day in public employment had some influence in bringing private employment up to that standard, and, again, the lead taken by Congress and by the State and local governments in establishing the 8-hour day has assisted the labor element in securing whatever of that reduction in private employment they have been able to bring about.

Besides the direct employment which the Government, in its several branches, provides, there is a still larger amount of indirect employment on public works, and in the manufacture of goods and material, which is conducted through contractors. It was not until 1892 that Congress enacted a law which extended the 8-hour day to contractors and subcontractors upon the public works of the United States or the District of Columbia. Later State legislatures have taken this position, the laws on that subject having been enacted mainly in 1899, although the law of Kansas dates from 1891 and that of Colorado from 1894.[1] The efficiency of those laws is not always secured, because there is no provision for their enforcement through a State official. The law in Kansas was a dead letter, until, in 1898, the legislature placed its enforcement in the hands of the Commissioner of Labor.

It is evident that without the extension of the 8-hour law to public contractors the Government is at a disadvantage in a comparison of the costs of production in those enterprises which are operated by its own employees. The extension of the 8-hour law to contractors on public works equalizes the conditions of public and private employment in those branches where work is done partly by the Government or municipality and partly by contractors. This discrepancy has, indeed,

[1] Reports Industrial Commission, Vol. V, p. 25.

led to a larger proportionate use of the contract system than was the case before the enactment of the 8-hour law. Even the Federal law of 1892 does not bring contractors up to the level of Government employment, since it is defective in the particular that an exception is made in cases of "extraordinary emergency." The character of the emergency is not described, as is usually done in such legislation; and, consequently, contractors are accustomed to employ laborers and mechanics for a longer period than 8 hours, and to certify the extra hours as due to "extraordinary emergency." Undoubtedly, the emergencies contemplated in the act are those only of fire, flood, or military operations, when life and property are endangered. An amendment specifying these classes of emergencies is necessary in order that the law of 1892 may bring about the objects intended, and may place contractors on public works on a level with the departments which conduct their work through their own staff of employees. The law, also, is not interpreted in such a way as to regulate the hours of employees at a distance from the actual construction, and on this account, while the 8-hour day may prevail in the erection of a custom-house or post-office, the stone may be cut in another State on the 9 or 10-hour system.

It is to be noted that the law of 1892 applies only to public works, and not to goods or material furnished to the Government. It applies only to such constructions as fortifications, breakwaters, public buildings, and so on. The Government is also a purchaser through contract of a large quantity of army and navy equipment, vessels of war, clothing, boots and shoes, paper, etc. It is perhaps true that the reasons for applying the 8-hour day to contractors on public works are stronger than those which would apply the same to contractors on goods or material manufactured for the Government. It is objected that a law of this kind would require public authorities to trace the material purchased by contractors back to the original manufacturers, and from the original manufacturers back to the raw material extracted from the soil or brought up from the mines. This objection is certainly fatal to a measure which does not make exception of all material purchased upon the open market. It has been decided by the Attorney-General that the act of 1892, providing for 8 hours on public works, does not apply to material purchased by contractors, but applies solely to the employees under the immediate direction of such contractors or subcontractors. The same distinction should unquestionably be made in any legislation providing for the 8-hour day upon goods or material manufactured under contract for Government use.

More weighty, however, than this objection is that which holds that if manufacturers are compelled to work only 8 hours on Government work they will be compelled to reduce the hours on private contracts to the same number. Contracts for goods and material are made by

establishments manufacturing for the general market, and it would be impossible to separate their Government contracts from their private contracts. Doubtless the effect of such legislation would be extensive. It would apply to all vessels of war, all clothing and boots and shoes manufactured for the Army, and all army and naval equipment. The probable number of employees affected in these industries can not be predicted; but it is probable that such legislation would bring about at first a specialization of factories for public work. This might involve somewhat higher prices paid by the Government than those paid by private purchasers; but as a practical means for promoting the adoption of 8 hours throughout the industries of the country, such a measure would unquestionably have wider and more beneficial effect than any other that could be adopted by Congress. Such a bill, reducing the hours of labor on all Government contracts to 8 hours per day, was introduced in the Fifty-sixth Congress and passed the House, but failed in the Senate.

II. RELATIONS OF EMPLOYERS AND EMPLOYEES.

THE STRUCTURE OF LABOR ORGANIZATIONS.

GROWTH AND MEMBERSHIP.

As an association of wage-earners, the trade union began to be possible only when a distinct wage-earning class arose. So long as hand workers were in large part men who wrought their own materials or the materials of their customers with their own tools, no wage-earning class, such as we know, existed.

Very early in the eighteenth century English capitalists began to carry on considerable enterprises in the working of wool and in the manufacture of clothing; and with this class of capitalist manufacturers there necessarily grew up a correlative class of workers, who had no prospect of being at any time in their lives anything but workers for wages. As soon as this class of permanent wage-earners appeared in large numbers, combinations began to be formed among them for the purpose of maintaining or bettering their condition. From the beginning of the eighteenth century, therefore, English writers on social and economic subjects began to lament the wrongful and illegal practice of combination for the raising of wages. No doubt appears to have existed in the minds of the classes which were able to make themselves heard that the raising of wages was injurious to society, and that, therefore, combinations of workmen for such a purpose ought to be suppressed. Combinations and agreements were made among employers not to pay wages beyond certain fixed rates;

but a more efficient means of repression, it was thought, was found in the law courts and in Parliament. The common law of conspiracy was invoked against combinations of workingmen to raise wages, though never, it is believed, against combinations of employers to lower them. Parliament passed successive acts, more and more stringent, against combinations of workmen, culminating in the great act of 1799. It was not until 1824, and then, it should seem, by a Parliament which scarcely realized what it was doing, that the most oppressive legal restrictions upon combinations of workmen were swept away in Great Britain.

In spite of legal obstacles British trade unionism had by this time obtained a wide extension. The evolution of industrial society had proved too strong for legal fetters. Yet the membership of the British unions was trifling at that time, and even throughout a large part of the nineteenth century, compared with their membership at present. Notwithstanding their long establishment, they have, even in very recent years, greatly increased their strength. The statistical tables of the labor department of the Board of Trade, to which the unions of Great Britain and Ireland report, begin with the close of the year 1892, and the latest tables available bring the figures down to the close of 1899. During those 7 years the membership of the British unions increased from 1,500,000 to 1,800,000, or 20 per cent.

In the nature of the case trade unionism could not but be of far later establishment in America than in Great Britain. It was not until far into the nineteenth century that any communities which could fairly be called industrial, in the narrow sense, arose upon this continent. No organization closely corresponding to the modern trade unions can be traced in America until after the year 1800. The middle of the nineteenth century was passed before trade unions acquired any importance here. During the sixties and seventies organizations in a few industries, such as railroad transportation, iron manufacture, shoe making, cigar making, and printing, began to make some stir. The growth of the Knights of Labor during the eighties first brought the membership of American labor organizations well up into the hundreds of thousands. In 1886, about seven hundred thousand workers owed allegiance to the Knights of Labor. While a few independent trade unions had at this time considerable importance, many of their members were members also of the Knights, and the membership of the Knights comprised far the greater part of the organized workers of America. The decline of the Knights from 1887 onward was accompanied with a gradual increase in the number and membership of the organizations of the separate trades. On the whole, however, the number of organized workers undoubtedly diminished. It apparently rose again during the years from 1890 to 1893, but fell off when the industrial crisis came. From about 1894 or 1895 the number has con-

stantly increased, and during the prosperity of the last two years the increase has been exceedingly rapid.

It is not possible to state in figures, even approximately, the changes from year to year. It seems probable that the labor organizations have to-day two or three times as many members as they had in 1890, or after the panic of 1893. It is likely that the number may have doubled even since 1896 or 1897. Such opinions are based, however, on inadequate data, and can not be advanced as positive assertions. Even the membership at the present time can be stated only approximately, with somewhat wide allowance for error. It is believed, however, that the aggregate membership of labor organizations in the United States at the present time is nearly 1,500,000.[1]

LOCAL AND NATIONAL ORGANIZATIONS.

The primary form of labor organization is of necessity the local union. It is only after local organizations have attained a considerable solidity and a considerable sense of oneness that they coalesce into wide-spreading combinations. In the United States a distinction has come to be recognized between local unions on the one hand and national or international unions on the other. The local union usually consists of members who live and work in a single town, and its affairs are managed by vote of all the members, coming together in one meeting room. The national union normally aspires to unite all the local unions of its trade in the United States. If it contains Canadian branches it is common to use the term international.

In industries like coal mining, stove casting, and steel manufacture, in which the area of competition is broad, both the employers and the employees tend to come together into extensive organizations. In coal mining, for instance, we find the employers of Illinois, Indiana, Ohio, and the western part of Pennsylvania gathered into one great, though informal, organization, whose primary object is the establishment of uniform conditions by agreement with the organization of workingmen. On the other hand, in industries of localized competition, like the building trades, we find strong local organizations of employers, but they do not tend to coalesce into bodies covering the whole country or large parts of it.

Even in those trades in which competition is most exclusively local, like bricklaying and carpentry, the workmen bring together their local unions into national organizations with a regularity only less than that which appears in occupations of more wide-spreading competition. The explanation of this fact is doubtless to be found in the existence of an interstate and international competition among the workmen, even

[1] For the basis of these estimates, see Reports Industrial Commission, Vol. XVII, pp. xix, 28, 29).

when no such competition exists among employers. With the exception of a few great firms, which take contracts for the larger sort of buildings in cities far removed from their home offices, employers in the building trades have no direct industrial relation to each other beyond the limits of their respective towns. But the working bricklayer who is in New York to-day may be next week in Chicago. If the bricklayers need unions at all, they need an organization which will bind them into one. The unity of action, on which the unionist believes the advancement of his trade to depend, must include the newcomer and the wanderer as well as the long-settled craftsman.

So far as employers in distant places do come into competition with each other, their interests also may often be promoted by the coalescence of the local unions of their men. It tends to the establishment of uniform conditions throughout the industry, and thus moderates the severity of competition between employers. This effect is most marked when wide-spreading organizations of employers are also formed, like those which exist in coal mining and in some of the metal trades, and when they settle wages, hours, and other conditions by direct agreement with the unions.

Attempts to establish scales of wages throughout the jurisdiction of national unions are as yet confined to a very few trades. All such questions are as a rule left to the local bodies. To maintain the consciousness of the unity of the craft is perhaps, generally speaking, the distinctive aim of the national trade union. Loyalty to the common interest accompanies the sense of unity. Out of the sense of unity comes that mutual support in specific contests which is so prominent a phenomenon in the labor world.

An obligation to give financial support in some form to the strikes of the several branches is recognized in every national union. This is only a somewhat intensified form of the obligation, which all trade unionists recognize, to support the contests of all other trade unionists in other trades as well as in their own. That the motive for such support is far stronger within a trade than between different trades is evident. Bricklayers may receive higher wages in New York than in Albany; yet any depression of wages below the existing standard in either place will tend to exert a depressing influence upon bricklayers' wages in the other. No change of wages in one trade can produce an effect nearly so direct in the wages of another trade at points so far removed in space.

In the more highly organized national unions the obligation of mutual support is regulated by specific laws, and is steadily and equally enforced. In many of the weaker and looser organizations, however, the laws for the enforcement of it are either wholly wanting or have not been brought into actual and steady operation.

Some unions have developed elaborate systems of mutual insurance against death, sickness, accident, and unemployment. Such a system reenforces the sense of unity. Larger contributions and larger funds directly increase the financial strength of the organization for labor contests.

Aside from the direct benefits to the workmen concerned, and aside from the benefits which employers, at least in some trades, draw from the uniformity of conditions and the regulation of competition which widespread organization makes possible, there is a general public advantage in the large influence which comes, through the establishment of great national organizations, to labor leaders of a high type. The average caliber of the leaders can not but increase with the size of the organization. Moreover, the very sense of large responsibility tends, as has often been noted in matters of political government, to sober and to restrain. There is abundant testimony to the high general character and ability of the leaders of the great national organizations. Such testimony is given even by men who have no love for labor organizations as such, and whose opinion of the average character of local labor leaders is far different.

The counsel of the national officers is likely to be called for when any serious labor trouble arises; and their counsel in a great majority of cases is likely to be conservative and restraining. The local union sees its little grievance, presses its complaint with growing anger, and is tempted to rush into the last extremities of labor conflict. The national officer is able in some degree to see the force of the opposite contention, and, still more important, is able to form a rational judgment of what the circumstances may make it possible to do. His counsel, therefore, is likely to be opposed to those hasty, rash, and hopeless strikes which make up so large a fraction of the whole number of labor contests.

The national organizations also tend to diminish the number of labor contests through the rules and regulations by which they restrain the action of the locals. Control of strikes by the national bodies is a matter of gradual development, and in many of them it has not yet made any considerable advance. So far, however, as they interfere at all, their interference is almost uniformly in the direction of restraint. Except in a very few organizations the national officers have no authority to order a strike. The decision to strike can be made only by the local body affected, and the power of the national officers is a power of veto. Such a power of direct veto exists in a considerable proportion of the national unions, especially the older and stronger. The effectiveness of the control which the national organization can exercise is greatly increased where strike funds may be granted or refused by the national authorities.

THE UNIFICATION OF ALL WAGE WORKERS.

Two important attempts have been made in the United States to go beyond the national organization of a trade or an industry, and to bring all the wage-earners of the country under a single jurisdiction. The first was that of the Knights of Labor. This organization was formed in 1869. It maintained a relatively quiet existence, growing steadily but moderately, until about 1885. At that time events brought it very prominently before the public eye, and its membership rose in a year's time from about one hundred thousand to six or seven hundred thousand. It was disastrously defeated in some contests with employers, and sank into comparative obscurity almost as rapidly as it had risen.

The fundamental idea of the Knights of Labor is the unity of all workers. Its characteristic motto is, "An injury to one is the concern of all." It regards this unity of interest as necessitating unity of policy and of control; it conceives that unity of control can be effected only by concentrating all responsibility and power in the hands of the men who may be chosen to stand at the head of affairs. The control of the organization rests wholly in the general assembly, and except when the general assembly is in session the orders of the executive officers, elected by the general assembly, are required to be obeyed by all members. While the several trades are separately organized within the order, so far as this is practicable, every such separate trade organization is subject to the control of the general officers.

It is notable that the first local assembly of the Knights was composed exclusively of garment cutters, and that when members of other trades were admitted they came in only as "sojourners." As soon as enough sojourners of one craft had been gathered, they were required to swarm and form an assembly of their own. The policy of separate trade assemblies could not be uniformly carried out, however, especially in the smaller places.

The second great effort to unite the wage-earners in a single organization is that of the American Federation of Labor. The Federation differs from the Knights in that it tries to make itself distinctly an organization of wage-earners, while the Knights desired to include all productive workers, whether or not they received their compensation in the form of wages. More important, perhaps, it differs also in its form of organization, and in the ideas of policy which lie at the basis of the form of organization. The Knights of Labor may be compared to the "republic, one and indivisible," which was the ideal of the revolutionary statesmen of France. The Federation is based on that principle of alliance, and union for certain purposes, of independent minor republics, upon which the union of the American States proceeded. Each trade is independently organized, not, it is conceived, by virtue of any authority emanating from the head of the whole, but

by its own independent power. Each trade organization retains its sovereign control of its internal affairs, and only joins with the others in a federal organization for the consideration of common interests and the promotion of the common good. The American Federation of Labor now includes an overwhelming majority of the organized workers of America. The strongest of the railroad brotherhoods—the engineers, the firemen, the conductors, and the trainmen—remain outside of it, and so do a few other important organizations. With the exception, however, of the four great railroad brotherhoods referred to, it is not improbable that the majority of the members of labor organizations outside the Federation are in the local unions which have no direct affiliation with any other body, excepting, perhaps, the central labor unions or trades assemblies of their cities.

The evil effect upon general wages, even in the organized trades, of the existence of a great unorganized residuum is clearly recognized by the unions. The American Federation of Labor, representing the great majority of the organized workers of America, has given special attention to this problem within recent years. Its organizers are active throughout the country in forming new local trade unions, both in trades which have national organizations and in such as have not. Besides this, the Federation establishes "federal labor unions"—mixed local unions to which all wage-earners are eligible who are not within reach of local unions of their crafts. These federal labor unions are apparently similar in constitution to the mixed local assemblies of the Knights of Labor. They have continued, however, to be regarded as recruiting stations, out of which local unions of particular trades are expected to be formed as fast as enough workers in the several occupations are gathered; though they are also looked upon as a permanent protection for the residuum, and, by raising the weakest class of workers, are expected to be a safeguard for the organized crafts. In many places, particularly towns and cities of moderate size, the federal labor unions have become powerful institutions. Some have attained a membership of hundreds, and, in a few cases, even of thousands.

LOCAL TRADES COUNCILS.

Local councils, composed of delegates from local unions of a particular place, play a considerable part in trade union activity. They are of two sorts: councils of related trades, such as those engaged in building or metal working, and general councils, to which all the trade unions of a place are invited to send delegates.

The former kind have a plain economic basis, in that they represent men who work for the same employers, or for employers who cooperate in the same industry. Their technical and industrial relations give them strength in united action. The sympathetic strike, as it develops

under their influence, is a formidable weapon. The building industry seems to offer the best field for them, and it is chiefly there that they have gained importance and have effected a marked improvement in the workman's condition.

The central labor union or trades assembly of the general kind has not the same economic foundation. It embraces unrelated trades, and has no other bond of union than the general notion of the unity of the whole working class. Because of the lack of close relation between the employments of its members, a sympathetic strike, if it should recommend one, would not be an efficient weapon. It does not as a rule directly raise funds for the support of the contests of its constituent unions. Its actual economic activity is almost limited to the boycott, and to pressure upon employers enforced by fear of the boycott. It has, however, a second sphere of activity in political action. The conditions of labor in public employments offer a legitimate and important field for it, and there are many legal regulations which interest the working people as citizens, and upon which, perhaps, they can best exert an influence through some such organization. Unfortunately, legitimate political activity is likely to degenerate into a personal struggle for political office, where an organization does not have primarily an industrial object. Such degeneration sometimes appears even in building trades councils, notwithstanding their strong economic basis. It is much more frequent in the central labor unions, whose purposes are more closely connected with politics.

JUSTIFICATION OF LABOR ORGANIZATION.

NECESSITY OF ORGANIZATION.

It is quite generally recognized that the growth of great aggregations of capital under the control of single groups of men, which is so prominent a feature of the economic development of recent years, necessitates a corresponding aggregation of workingmen into unions, which may be able also to act as units. It is readily perceived that the position of the single workman, face to face with one of our great modern combinations, such as the United States Steel Corporation, is a position of very great weakness. The workman has one thing to sell—his labor. He has perhaps devoted years to the acquirement of a skill which gives his labor power a relatively high value, so long as he is able to put it to use in combination with certain materials and machinery. A single legal person has, to a very great extent, the control of such machinery, and in particular of such materials. Under such conditions there is little competition for the workman's labor. Control of the means of production gives power to dictate to the workingman upon what terms he shall make use of them.

This power may not be used oppressively. Up to the present time there seems to be no reason for asserting that the actual economic condition of workingmen has been changed for the worse, in most cases, by the combination of their employers. But the fact remains that the power of the employers is far greater when they act together under a single control than when they compete with each other for the workman's services.

The tendency toward unified control of capital and business has only intensified, however, without essentially changing, the disadvantages of the wage worker in his dealings with employers. Even when the number of employers is considerable, the number of workmen is far greater. The competition for work is normally far sharper than the competition for workmen.

The seller of labor is worse off in several respects than the seller of almost any physical product. His commodity is in the highest degree perishable. That which is not sold to-day disappears absolutely. Moreover, in the majority of cases the workingman is dependent upon the sale of his labor for his support. If he refuses an offer, the next comer will probably accept it, and he is likely to be left destitute. If, on the other hand, he accepts less than a certain minimum wage, his efficiency suffers. If the other conditions of the market remain unchanged, he can get even less to-morrow than to-day; for he can accomplish less.

Considered merely as a bargainer, as an actual participant in the operations of the market, the workingman is almost always under grave disadvantages as compared with the employer. Except the trifling higgling which he may do in the purchase of his small necessities, he is accustomed to bargain only in the sale of his labor, and the bargains which determine that sale are likely to be made at somewhat long intervals. Every employer, small or great, of necessity devotes a considerable share of his attention to bargains of purchase and of sale. If the labor bargain is made with a foreman, the foreman is continually engaged in such bargaining, and develops in it a very special skill. Both the foreman and the employer have also, in most cases, a higher degree of general intelligence and mental activity than the workingman with whom they deal.

But aside from all questions of mental dexterity and acquired skill, the orkingman is at a disadvantage in that his economic weakness is well known to his employer. The art of bargaining consists in a great degree in concealing one's own best terms and learning one's opponent's. The workman can not conceal his need of work, and can not know how much his employer needs men. He is relatively ignorant of the conditions of the market, both the market for labor and the market for the goods which his employer produces. It is the business of his employer to keep himself informed of the state of both markets.

The employer is able to judge what he can afford to pay for a given quantity and kind of labor rather than do without it. He is also in a position to judge at what rate he can probably get it. Under such conditions the result of free competition is to throw the advantages of the bargain into the hands of the stronger bargainer.

ECONOMIC RESULTS OF LABOR ORGANIZATION.

An overwhelming preponderance of testimony before the Industrial Commission indicates that the organization of labor has resulted in a marked improvement of the economic condition of the workers. Many specific instances might be cited. A building contractor in Chicago stated that the common laborers on buildings usually received from 90 cents to $1.75 a day in 1896, when they had no organization; but that in 1898, when they were organized, they received a uniform rate of $2. The structural iron workers of Chicago are said to have received from 25 cents to 27½ cents an hour before 1890, when they had no organization. They formed a union in 1890, and gradually raised their wages, until, in 1897, they received 45 cents an hour. The organization of the railroad conductors is declared to have secured increases of wages amounting to from 5 to 25 per cent between 1890 and 1899 on practically all the roads outside of New England and the Middle States, as well as on many roads within that territory. Perhaps the most striking recent instance on a large scale is that of the coal miners. According to the testimony of Mr. Mitchell, president of the United Mine Workers, their wages were increased, on the average, 40 per cent between 1897 and 1901, in the so-called competitive district, embracing Illinois, Indiana, Ohio, and the western part of Pennsylvania, and nearly as much in Alabama, Kentucky, Tennessee, Missouri, Kansas, Iowa, Michigan, and central Pennsylvania. Mr. Lucas, editor of the Black Diamond, of Chicago, stated that the rise of wages increased the cost of coal in Illinois about 22½ cents a ton in the interval of a single year, from 1899 to 1900.[1] It should be borne in mind that the greater general prosperity of the last two or three years has contributed to the rise of both prices and wages.

Here and there an employer is found who denies that workmen have gained, as a whole, through organization. While it is admitted that the organizations have raised the daily rates of wages, two or three witnesses believe that the high rates have so increased unemployment that the yearly incomes of the workers are no greater. The attractive force of exceedingly high wages upon workmen in places where rates are lower is thought to be too great. Competition for employment in the centers of high pay is believed to be abnormally increased.

[1] See also p. 734 of this report.

In addition to this specific argument, however, some employers hold on general grounds that the rate of wages depends on conditions of demand and supply in the market, which can not be largely and permanently altered by any artificial measures.

It must no doubt be admitted that, if wages in a single place are raised far above the general level, a movement of workers from other places will set in, which will result in an approximate equalization of conditions, either by reducing again the daily wages or by making employment less regular. This, however, is not an argument against organization, but an argument for universal organization. None will admit more readily than the unionist himself that the effectiveness of his organization is proportionate to the completeness with which it controls its trade.

Such meager statistical data as are obtainable do not seem to show that when an organization controls a complete competitive area the raising of wages by the day or by the piece tends to produce a compensatory diminution of employment. The coal miners furnish a case in point. The bituminous coal mines of the United States were active 192 days, on the average, during 1896. In spite of greatly increased average wage rates, their activity increased to 211 days in 1898 and to 234 days in each of the years 1899 and 1900. This increased activity was, of course, a result of general trade conditions, largely connected with reviving industrial prosperity; but if the activity of the mines had chanced to decrease when the wages of the miners were largely raised, there would have been an opportunity to maintain that the rise of wages caused the increased irregularity of employment.

If the wages of workers on buildings are increased, and if the cost of buildings is increased to just the same extent, persons other than building workers will, on the average, content themselves with smaller and cheaper buildings. At the same time, paying more for buildings, they will have somewhat less to spend on other things; but the building workers will have just so much more to spend. The makers of buildings will themselves occupy somewhat larger and better ones, and their demand for other products will also be increased. Taking the whole of society together, there will be some redistribution of demand, but no decrease. The redistribution may involve a diminished demand for buildings; but, if so, the demand for other things will be increased substantially to an equal extent through the increased consuming power of the building workers. If the rise of wages, instead of being confined to a single group of trades, were equally distributed through the whole class of wage-earners, there might be no noticeable change in the relative demand for any broad class of products, such as buildings. There would be another kind of readjustment of demand. More goods of the cheaper sort, such as wage-earners buy, would be called for, and less of such as are bought

by richer people. It does not seem possible, however, that any diminution of employment on the whole would result.

The power of labor organizations to maintain wage rates, even in industrial depression, is repeatedly referred to in the testimony before the Commission, and it is regarded by several witnesses as an influence of great importance in moderating the severity of depression and diminishing its length. By keeping up wages, the organizations are asserted to increase the purchasing power of the wage workers, and so to diminish the tendency to overproduction or underconsumption.

The most thoughtful leaders of the unions are devoting great attention, perhaps their chief attention, to the lessening of hours. Many of them hold that the lessening of hours tends to give work to the unemployed and to raise wages. Whether or not these opinions are justified, it seems impossible to doubt the value of increased leisure for the higher development of social life. The worker who spends 11 or 12 hours at a machine has little time and little energy for any avocations but eating and sleeping. The 10-hour worker has more opportunity for family and social life, for recreation, and for self-cultivation. The opportunities for all these things are vastly increased when the hours of labor are reduced to eight. It is not disputed that the increase of such opportunities for the higher life, for a large fraction of our population, is largely due to the labor organizations. While it has sometimes been maintained that the hours rescued from the shop would be put to worse use and not to better, the overwhelming weight of evidence before the Industrial Commission tends to show that dissipation is a concomitant of long working hours and poor conditions; and that men tend to make better use of their opportunities as their opportunities are increased.[1]

DEMOCRACY IN INDUSTRY.

As the units of industry have become larger, the individual workman has been further and further removed from the control of his own daily life. He has felt himself under the control of powers upon whose conduct he has been able to exercise no direct influence.

The philanthropic hope has not quite disappeared that workingmen will attain a share in their industrial government by becoming stockholders. A few corporations, like the Illinois Central Railroad Company, have encouraged the purchase of their stock by their employees. There is no sign, in the results of such experiments or elsewhere, that enough stock will ever be acquired by workingmen to give them in the aggregate any actual power in industrial affairs. Neither does

[1] Reports of the Industrial Commission, Vol. VII, pp. 79, 80, 120, 176–179, 206, 214, 274; Vol. XII, 48. For a fuller discussion of the lessening of the hours of labor, see pp. 763–793, above.

experience offer any hope of a democratic organization of industry by cooperative methods. In view of the enormous and increasing size of the units of industrial control, any expectation of an effective participation of wage-earners in the government of the great industries by any method based on their individual ownership of shares of the capital is chimerical.

By the organization of labor, and by no other means, it is possible to introduce an element of democracy into the government of industry. By this means only the workers can effectively take part in determining the conditions under which they work. This becomes true in the fullest and best sense only when employers frankly meet the representatives of the workmen, and deal with them as parties equally interested in the conduct of affairs. It is only under such conditions that a real partnership of labor and capital exists. In such conferences as those between the United Mine Workers and the coal mine operators, this real industrial partnership is frankly recognized and made the basis of negotiation.

The general tenor of the testimony before the Commission seems to be that employers view the organization of labor with increasing tolerance, even where they do not view it with marked favor. The unions themselves seem increasingly to deserve the respect of the employers and of the community. Proficiency and wisdom in self-government are gained by practice. Men who have been accustomed to absolute submission in industry show the same faults when they first take up the burden of self-government as men who have been accustomed to absolute political submission. Only experience with democratic forms and methods can develop the good that is in democracy; but so far as employers take a long look ahead, and act in the interest of the ultimate welfare of society, it is believed that they will encourage rather than repress the growth of democratic government in their industries. Their guidance may be the means of preventing many mistakes that would otherwise be made, and their friendship will be rewarded with friendship. If they adopt a repressive policy they may perhaps succeed in it; but so long as the tradition of freedom is strong in the minds of the working people they can not destroy the aspiration for a measure of self-government in respect to the most important part of life. If the working people are prevented from introducing an element of democracy into industrial life by way of labor organization, they will undertake to introduce it in another way. It is because the workingmen feel that their trade organizations can effect nothing, said Mr. John Graham Brooks, before the Industrial Commission, that socialism grows in such New England towns as Brockton and Haverhill. If manufacturers want to make socialists in this country, added Mr. Brooks, they have only to "smash the unions."

POLICIES OF LABOR ORGANIZATIONS.

The union has two general methods of bettering the economic condition of its members. It may try to strengthen the strategic position of the individual workman in dealing with the employer, or it may take the function of bargaining altogether out of the hands of the individual. The former policy involves an attempt to diminish the number of competitors in the trade. The latter has no necessary reference to the number of individual workers, but involves the placing of the interests of all the workers under a single control, so that the whole amount of labor power available in the trade may be handled in the market as a unit.

The restriction of the number of competitors is undertaken chiefly through measures for diminishing the number of learners. It is to this end, at least in a great degree, that all the union regulations of apprenticeship, which are discussed below, are directed. For the same purpose, in trades which feel the competition of foreigners, and in which at the same time the strength of the union is such as to promise effective control, restrictions are placed, by high union initiation fees or otherwise, upon the entrance of foreigners into the occupation.

Such regulations as these, however, play a relatively small part in the policy of the unions. That upon which they chiefly rely is unity of action. If the whole body of workers of a given kind can be brought into the union, so that the union can meet the employers as the representative of the whole, the position of the worker will be greatly strengthened. There will still remain the absolute perishability of his commodity—the need of selling his labor to-day under penalty of the total loss of to-day's portion. But he will be freed, by the support of his fellows and of the union funds, from the necessity of accepting whatever is offered, on pain of beggary. The fear that if he refuses to accept certain terms his neighbor will accept them will also be removed. His ignorance of market conditions will be partly remedied, both through the combination of the knowledge of all the members of the union, and, in some cases, by the broader outlook which the union officials, wholly or partly exempted from daily application to manual work, may be able to obtain. The whole matter of bargaining can be put into the hands of the most skillful; and the officers and leaders may develop a skill in bargaining, by constant practice, comparable to that of their opponents.

Unified action involves definite rules as to wages, hours, and other conditions of work. This alleged "tyranny," or interference with the "freedom" of the members, has often been considered one of the most objectionable features of the unions. There are, it is said, "honest men with wives and families to support who are willing to work for one and two dollars a day, but they can't get it. Why?

Because their union or their trust won't allow them. The standard is set for them, and if they don't wait and starve their families until they can reach that standard they can't get work anywhere. Everywhere they go they are met by the same condition of affairs, all over our United States. A workingman can't work for what he wants to—he must work for what somebody else says he must work for."[1]

To the mind of the union man the fixing of minimum wages by the union does not seem to involve any diminution of his liberty. The union brings him a sense of greater liberty. When he dealt as an individual with his employer, he had to accept regulations and rates of pay which he had little or no voice in determining. He was under an industrial authority which left him no freedom except the freedom to leave its jurisdiction. The union is a democratic government in which he has an equal voice with every other member. By its collective strength it is able to exert some direct influence upon the conditions of employment. As a part of it, the individual workman feels that he has a voice in fixing the terms on which he works. He exchanges the sense of subjection to the employer for a certain sense of free action. This increase of freedom is, in fact, a result of organization which appeals most strongly to the minds of many workingmen, and which some of them mention among the things they prize the most.

The fixing of the terms of employment of considerable numbers of men by definite and general rules is not peculiar to labor organizations. It is a necessity of industry upon a large scale. The small employer may be able to make separate bargains with individual men; but the large employer must, of necessity, classify his hands and fix their pay by rule. The mere setting up of such fixed rules is not, therefore, the essence of the complaint against the labor unions.

When wages are fixed by the piece the necessity of uniform rates is evident. A uniform price per piece will give a variable rate per day, depending on the efficiency of the workers. It is in regard to time wages that fault is found with the principle of the union rate. The unions try, say their opponents, to reduce all men to a common level; and a common level is of necessity the level of the slowest and the dullest.

It is not uniformity of daily or weekly pay which unions really desire. The uniformity which they seek is equal pay for equal work. It is true that there is a widespread objection to the piecework system. Even unions whose members work under it do not always approve of it. But this is because it is felt to interfere with the real final purpose of the organization—the maintenance and the increase of the rate of pay per unit of output. Uniformity of pay per unit, desirable as it is in itself, is chiefly important as a means of securing higher rates of pay. If, under the circumstances of a given trade, the rate per unit of output

[1] Telegram to Chicago Evening Post from Philadelphia, May 25, 1897.

seems more effectively protected by the time system than by the piece-price system, the time system will be preferred; and the uniformity of the rate per unit must be protected under it by such means as are available.

As a matter of fact, no union forbids variations of time wages. The universal policy, where time wages are involved, is to fix a minimum. In most unions the fixed minimum is in practice the actual wage received by the large majority of the members; but the union leaders generally profess entire willingness that the employers pay more. Objection is sometimes made to special payment for mere speed, on the ground that such arrangements are intended to establish an abnormally fast pace, which may be made a standard for the whole. But for special skill, as shown in the quality of work, or in the ability to do particularly difficult jobs, extra payment is made not infrequently, and with the full approval of the union authorities.

It might seem to be possible for the union itself to fix grades of ability, with corresponding differences of wages, to which it might assign its several members; but the universal voice of the union world declares this to be impracticable. Such grading could not be effected without jealousies and heartburnings. In a purely voluntary and democratic organization, whose strength depends upon the loyalty of its members, it would not be safe to introduce a policy so heavy with causes of discord. On the other hand, to permit members to be assigned to different grades by the employers would be to revert to the individual bargain; and the tendency would be to reduce the greater part of the members to the lowest grade.

In a few exceptional cases the rigid enforcement of the minimum wage is waived. This is done oftenest for members whose hands have lost their cunning by reason of advancing years. Some unions give special consideration to the cases of such men, when they request it, and authorize them to accept special wage rates lower than the regular minimum. This is very rarely done, however, for any other reason than age. Men in their full strength must take their chances of finding employment at the rates that others get.

Time wage rates have been greatly increased by union action, but the increase of the rate per unit of product has been by no means so great. In two ways a comparatively stable relation is maintained between output and pay.

In the first place, as wages go up, employers find that it does not pay them to keep any but the most efficient men. The weaker, the slower, the less skillful, find their employment more and more precarious. They hang upon the outskirts of the trade, occupied when business is active, idle when it is dull. In the end they leave the occupation altogether, or leave the union and work at nonunion jobs, or drift away to places where wages are smaller and the pace is slower.

In the second place, the pick of the men, left by this process of selection, increase their pace. They are led to do it partly by a sense of satisfied ambition in the wages they are getting, and partly by the fear that they may find themselves among the rejected. In such unions as those of the bricklayers of New York City, which have obtained a considerable increase of pay within ten or fifteen years, the men declare that the pace has been greatly quickened.

APPRENTICESHIP.

The entrance to a trade must necessarily be through a period of instruction and practice. In the old days the learner was legally bound to a master, by whose side he worked, from whom he received personal instruction in the craft, and in whose house he usually lodged and ate.

The growth of the great industry has done away with apprenticeship of the old type. There are no longer masters who can care for apprentices and give them personal instruction. The custom of legal indenturing has almost disappeared. It is a custom which the labor organizations, so far as their attitude can be judged from their formal expressions, look back to with a unanimous longing. A surprising number of the unions even to this day have in their written constitutions expressions of desire that suitable laws for the indenturing of apprentices be enacted, and that the custom of indenturing be renewed and enforced.

The unions complain that under existing conditions it too often happens that trades are not taught or learned at all. A boy is set to feeding a machine, and feeds it day by day and month after month. He is gradually advanced from simpler to more complicated operations. He remains, however, a tender of machines, and never becomes an artisan. The evil of this condition, from the standpoint of the union, is plain enough. The workman of former days spent years in acquiring a general and thorough knowledge of a craft. He is in danger of being replaced by a set of workmen, none of whom has passed through his training or has acquired such a skill as his, each of whom is only capable of tending a machine which has usurped a part of his work, but all of whom together threaten to make his skill industrially unnecessary and to deprive his training of its value. Machinery and the division of labor substitute low-grade for high-grade workmen. Though wages for the same grade of skill may be maintained, or may even rise, wages to the workmen actually engaged upon a given product tend, it is declared, to fall.

The unions, representing the interests of the workmen already engaged in the trades, could not fail, therefore, to desire the maintenance of a system of apprenticeship. Though apprenticeship enforced by law is beyond their reach, many of the stronger unions are able to

maintain something like it, by their own power, within the spheres of industry which they control. Wherever it is possible, the unions require that entrance to their crafts be through an apprenticeship of three, or four, or five years. They require also that the learner be not kept upon a single specialty, but that he be given a broad and thorough knowledge of the trade.

It is probable that the immediate interest of the unions leads them, in this respect, to combat in some degree the natural evolution of industry. It may be that they put greater restrictions upon the division of labor than the industrial interest of society requires. Though foremen and superintendents ought to have the most thorough and complete trade training which they can obtain, there seems to be a limit to the extent of knowledge which an ordinary workman can make direct economic use of. There is little demand for men who are capable of making a complete shoe. It is high skill and dexterity in some one minute part of shoemaking which is called for by modern conditions.

Something may, however, be said from the higher social standpoint in favor of the broader training which the unions try to insist on. It must be admitted that the man who has spent four years in acquiring a general knowledge of the machinist's trade, in all its branches, is likely to be a broader man and a better citizen of the Republic than he who has simply pushed pieces of iron between the jaws of a machine. It is not altogether certain that the greatest possible exploitation of low-skilled labor gives the greatest possible production of material wealth. It is in a high degree doubtful whether such methods of production, pushed to the extreme, result in the highest social well-being.

There is another kind of apprenticeship rule which is subjected to more frequent and severer criticism. This is the restriction of the number of apprentices. It is a very common policy, among unions which have strength enough to enforce it, to forbid employers to take on more apprentices than a certain limited number, generally fixed in some definite proportion to the number of journeymen employed. The purpose of this policy is unquestionably to diminish the competition for employment, and so to make the employment of the present members more continuous and to keep their wages higher. But the partial exclusion of American youth from the skilled trades is felt by outsiders to be not only unjust to the individuals whose choice of an occupation is restricted, but in broader ways injurious to society. There necessarily results, it is argued, an increased overcrowding of the less skilled occupations, and of those in which no such artificial restrictions exist. The restriction of apprenticeship can not be introduced except in trades in which the workmen have already obtained, through their skill and their organizations, a considerable strategic

lvantage, and presumably a relatively high rate of wages. A forcible xclusion of new recruits from such trades results in a forcible injection f an abnormal number of recruits into other occupations. These ther occupations are presumably, upon the average, already more rowded, and subject to lower wage rates and to worse conditions. 'he artificial and abnormal increase of recruits to them tends still urther to lower their wages and their conditions of employment.

The arguments with which the unions support the restrictive policy re based in part upon the same considerations, of the desirability of horough instruction in a trade, which have already been referred to. t is declared that, if the hiring of boys is absolutely free, the less crupulous employers get boys to do a large part of their work. Such mployment does not amount to an apprenticeship. It is not meant, ven in a subordinate degree, to teach a trade. The purpose of it is o get work done at the lowest possible rate. A boy is kept as long as ie will consent to work cheaply. When he begins to set a value upon himself he is discharged and a new cheap boy is hired. Meantime, he first has been taught no trade. He has simply learned a few simple movements. He began his work as an unskilled laborer, and he is still an unskilled laborer when he ends it. Such practice as he has obtained will be of trifling value to him, except in the improbable case of his getting new employment almost exactly similar. The restriction of the number of apprentices is a part of the same consistent policy, says the unionist, as the requirement of an apprenticeship of a fixed length. It is essential to the acquirement by the youth of an adequate knowledge of the trade in which he is engaged.

The hiring of an excessive number of boys, it is maintained, results in inferior work, and so in injury to the public. But, worse than that, it gives us idle men as well as busy children. The natural breadwinners walk the streets, while boys, who should be in school, take their places at the bench and the machine. The employers who are willing to follow such a policy are able, by means of their unfairly cheap labor, to underbid their competitors, and force them out of business, or compel them to adopt the same injurious tactics.[1]

Common as it is to make rules limiting the number of apprentices, there is some question how much effect such rules produce on actual conditions. The new recruits to most trades seem to come chiefly, it is true, from places where the trades are not organized, or where their

[1]The German law of apprenticeship, passed in 1897, recognizes the evils which may arise from permitting employers to take apprentices without restriction. The local administrative officers are authorized to order any employer, who has more apprentices than the size of his business justifies, to dismiss some of them; and the Bundesrath is authorized to fix, by a general order, a limit to the number of apprentices which a single establishment may employ in any line of business. According to the German industrial census of 1895, 12.6 per cent of employers, in that year, had more apprentices than journeymen.—[Conrad, Handwörterbuch der Staatswissenchaften, second edition, 1900, Vol. V, p. 580.]

his course by any of these considerations. To force him, havi such opinions and desires, to act contrary to them, seems at f thought a violation of the fundamental principles of natural liberty.

A strike because of the employment of nonunion men is felt l many to be an attack, not only on the right of the employer to ma age his own affairs, but also on the right of the nonunion men to ea a living for themselves and their families in such a way and on su terms as are satisfactory to them. It seems to be a violation of th principle of equal rights for all men. The members of the unions, i is said, arrogate exclusive privileges to themselves and deny equ rights to others. A labor union is a trust, whose aggressive conduc leaves its members no excuse for complaint of any trust or associatio of capitalists.[1]

The practice of attempting to procure the discharge or prevent the employment of nonunion men has been brought before the American courts in numerous cases in recent years. In most instances the court decisions have held that such action, especially where it seeks to bring about the discharge of those already in employment, is unlawful, either civilly or criminally. It has even been held by the court of appeals of New York that it is an unlawful conspiracy to procure the discharge of employees in pursuance of a written agreement between the employer and the union that only union men shall be employed.[2] The courts usually take the position that such action on the part of the unions is an interference with the liberty both of the employer and of the workingman. It is argued that every employer has the right to hire whom he will, and that workingmen have the right to enter any lawful employment. To compel a man to join a labor organization against his will is also considered to be illegitimate coercion.

The highest English judicial authority, the House of Lords, has recently held, in the famous case of Allen *v.* Flood, that workingmen have the right to refuse to labor with others to whom they object, or, indeed, to refuse to labor on any ground which seems to them proper. The question whether such action toward obnoxious employees was ethically justifiable, or whether it was desirable from the standpoint of the general public welfare, was not discussed; but the court held that the motive of the workingmen in their action was not to be considered in determining its legality. Several American courts have very recently followed this English decision.[3] The legal right of workingmen to refuse to labor with others, as well as the ethical and economic

[1] Reports Industrial Commission, Vol. VII, p. 757.

[2] Curran *v.* Galen, 46 N. E. Rep., 297, 298.

[3] Reform Labor Club *v.* Connaughton, Bulletin of New York Bureau of Labor Statistics, June, 1900, p. 159; National Protective Association *v.* Cumming, 53 App. Div., 227, 231, 232.

justification of such action, is still an open question, as to which marked differences of opinion exist.

From the ethical and economic standpoint the presumption must be in favor of any conduct which does not evidently interfere with the rights of others. There is no such evident interference in a mere refusal to work with a certain class of companions. Union and nonunion men alike may choose those whom they will work with. It is possible that a refusal of certain companions may be subject to condemnation, in some cases, because of its purpose or of other circumstances. If, for instance, the real object of the refusal were to inflict an injury, it could not be justified. But it is important to notice that the condemnation would rest on the object proposed, and not on the mere refusal to work, in itself. The question is, then, What is the actual object? Do union men, when they refuse to work with nonunionists, try maliciously to injure others, or are they seeking a legitimate benefit for themselves?

The direct object is to strengthen the union, by making it clearly to the interest of outside workmen to come into it. Every man's judgment of the policy under discussion will, therefore, be largely affected by his opinion of the broad purposes of the unions themselves, and by his opinion of their social effects.

The chief purpose of the trade union is to increase the market price of that kind of labor which the members have to sell. As soon as the union acquires a partial control of the market, strong enough to have some effect upon wages, all workingmen in the trade, both within it and without it, begin to profit by the increase. Workmen outside may gain in either of two ways. They may get the full rate which the members of the union get, or, by cutting under the union rate, they may secure steadier employment. In either case the union feels that it has a grievance against them.

The maintenance of the union organization, through which the wage is upheld, costs time and trouble and money. More important than anything else, it involves for those who are active in it the peril of the displeasure of their employers and the loss of their livelihood. If the nonunion man secures a rate of wages above what he could get if the union did not exist, the members of the union feel that he has made a gain directly at their expense. They have sown and he has reaped. It seems to them to be required by fairness that he share with them the burden of maintaining the conditions of which he reaps the benefit. If he is not willing to share the burden, it seems to them only just that he should be excluded from the gain.

If, on the other hand, nonunion men, as efficient as the members of the union, compete for employment by cutting under the union rates, there is a great weakening of the collective bargaining. The employer will prefer the nonunion to the union man because he is cheaper.

Those who are in the union will be tempted to leave it, because their chances of employment will be greater outside than in. The final result of the process, if permitted to work itself out freely, will be, it is declared, the destruction of the organization itself.

The intelligent and conscientious unionist accepts this argument the more readily because he looks beyond his personal interest to the interest of his trade and of the whole working class. The elevation, first of his immediate fellow-workmen, and afterwards of all wage earners, is the ideal which he sets before him. He believes that no other change, no increase of scientific knowledge, no ennoblement of art, no multiplication of material wealth, can be compared to this in its importance to the social body. He may or may not believe that it is necessary to look for radical improvement to changes of the laws. In any case the thing that seems to his mind to give the best promise of immediate results is the organization of labor. It follows that it is every man's duty, in his view, and in particular the duty of every wage earner, to strengthen the labor organizations. The workingman who stands aloof is often felt to be a recreant to his social obligations, and a traitor to his fellow-workmen and to his class.

There is beyond question much force in the argument of the union men in defense of their attempt to exclude others from employment. The union can exercise little control over the conditions of labor if there is a large body of unorganized men in the trade who do not join in collective bargaining, but who are willing to accept inferior conditions. If workingmen, perhaps through misunderstanding of the advantages which organization may bring them, are unwilling to join in the collective cause, there is much excuse for the endeavor to make their conditions such as to alter that determination. So long as the actions of labor organizations in this direction are peaceful, without intimidation or physical violence, it is not easy to see why they should be placed under the ban of the law.

The attempt to compel employers to hire only union men may evidently be poor policy for labor organizations which have not yet strength enough to enforce the demand. The animosity of employers is likely to be aroused by what seems to them dictation. It must not be forgotten, however, that, in a very large number of establishments, in many trades, employers—apparently with little objection—enter into agreements for the exclusive employment of union men. Yet it is obviously desirable that the unions should rely, so far as possible, upon persuading their fellow-workmen of the advantages of organization, and upon persuading employers of the superior efficiency and regularity of union labor, rather than upon more coercive methods.

The attempt of labor organizations to make their membership as comprehensive as possible is materially different in character from the attempt, less frequently made, to exclude persons altogether from the

trade. If the union is willing to receive any competent person into its ranks, no man can complain of being absolutely deprived of work because union men refuse to work with him so long as he fails to join the organization. When, however, a union has established a substantial control of its special kind of labor, the temptation arises to restrict the number of members. This is occasionally done by an absolute refusal to receive new candidates.[1] Such action is, however, rare; the forms in which this tendency more commonly appears are restriction on apprenticeship and high initiation fees.

LIMITATION OF OUTPUT.

The workman sells his labor for certain days or certain hours. The natural desire of the buyer is to get the greatest possible economic effect. The seller desires to give the least possible exertion.

That the tendency of workingmen is to restrict the output of their labor within more or less definite limits, which they have come to consider right and just, is undeniable. It has often been asserted that the effective force of this tendency varies with the efficiency of labor organization. The trade unions of Great Britain, for instance, have always been relatively stronger than those of America, and at the same time the tendency to fix definite limitations to the performance of each workman has been stronger there. One standard contrast between industrial conditions in Great Britain and in the United States is the greater freedom of the American workman from restrictive rules. To it is often attributed, in a large degree, his greater activity and effectiveness. The alleged decline of British industry is often laid at the door of the unions, by reason of their limitation of the product of their members.

It is true that the limitation of output is not effected by means of definite rules, except where labor organizations exist. It is only through some sort of organization that such rules could be established; but such rules, when unions frame them, only put into definite form desires and tendencies which have previously existed. They may be only the expression of old traditions of the trade. The nonunion machinist is almost as strenuous as the unionist against the running of two machines by one man.

The ground on which workingmen oftenest defend the restriction of output is the need of protecting themselves from excessive and injurious exertion. The stress and strain of work at high tension is declared in some trades to have reached a point which noticeably shortens the working life of the men. This is the complaint of the flint glass bottle

[1] For instance, the stonecutters' union of Newark, N. J., resolved in May, 1889, to admit no more members for one year. Reports of the Industrial Commission, Vol. XVII, p. 571. For exclusion of particular men, see Vol. VII, p. 702.

blowers, who formerly had a strict limitation of output, but gave it up some years ago. They are piece workers, and the spur is the desire of each man to get the highest possible daily wage. The skilled workmen in the steel mills are also piece workers. In the rolling of black plate for tinning the daily output of 30-gauge, per man, in 1893 and 1894, is said to have been about 3,600 to 3,900 pounds. The union has a limit for the day's work; but it was raised successively to 5,250 and to 5,750 pounds, and the president of the union testified, in 1899, that he was satisfied that some men were making, "illegitimately," as much as 7,500 pounds in the 8-hour day. Such a man, he declared, "does not consider himself physically, morally, or any other way. He does not consider the evil effect he is having upon his trade. He has no regard for his children who may follow after him."[1]

Under a time-wage system the spur to overexertion comes directly from the masters. Aside from direct and brutal driving, which is sometimes charged, the workmen point out various devices by which, as they allege, employers try to get increased amounts of work: the hiring of especially capable men, by extra payment, to set a pace which others can be directly compelled to follow, if anything like team work is involved, or which can be held up as an example that they must copy; in some sorts of machine work, the speeding up of the machinery; in others, increase in the size of the machines; in others again, the setting of one worker to tend two or more machines.

On the employers' side it is denied that the increase of the size of machines, or of their speed, or the placing of two or more under the charge of one person, necessarily involves an increase of exertion. It is pointed out that these changes are the direct result of the more perfect and more automatic working of the machines, and of the less attention which they consequently require. It is the unanimous assertion of the workmen, however, that these changes, taken together, do involve an increase of strain. The physical exertion may be no greater, or may even be less; but, it is declared, the strain upon the attention is such as to involve increased exhaustion at the end of the day, and a shortening of a man's working life.

It should be remembered that a man's industrial life may be shortened, not only by hastening his absolute deterioration, but also by raising the standard of efficiency. As the pace increases the number of men that can maintain it diminishes. Men a little past the prime of life, who would be able for years yet to do effective work, find themselves forced out of the industrial field because they are no longer capable of the intense application and the rapidity of movement which existing standards require.

[1] Reports of the Industrial Commission, Vol. VII, p. 393. See also, in the same volume, p. 927.

The workingmen not infrequently allege as an additional argument against too great rapidity that it is incompatible with excellence of work. A personal motive, which unquestionably plays its part at times, though it may not often be avowed, is the desire to "nurse a job"—to make one's employment last.

It may be that broader economic ideas have the greatest real influence in determining the limitation of work. These ideas have as their center the desire to maintain and to increase wages. There are several ways in which the limitation is thought by some workmen to contribute to this result.

In the first place, restriction is conceived to be necessary to prevent a direct lowering of the standard rate of pay. The standard rate, whatever terms may be used in stating it, means at bottom so much pay for so much output. To permit individuals to give, for any certain payment, a larger product than the standard current in the trade, is to revert at once to the individual bargain. It makes no difference whether the individual competition is introduced through cutting the price of a day's work or through increasing the amount of it. The one process, as well as the other, destroys the effectiveness of the union rate, and will end by compelling each worker to deal with the employer as best he may in his individual weakness.

If a few individuals increase their speed, their pace tends, it is declared, to become the standard pace in the trade. If the work is by the day, there is no tendency to a corresponding increase of wages. The workmen assert that the case is nearly the same, in the long run, if the work is by the piece. Under piece rates there is, of course, an increase of daily wages at first, if the pace is increased. But every employer has in his mind a more or less definite standard of just wages for each kind of service. If the piece workers begin to earn more than he considers fair, he will cut down the piece prices. In the end the men will work harder than before, and will get no more for it. Here, therefore, as well as under the day-wage system, the standard rate is best maintained, the workmen think, by keeping within certain standard limits of performance.

In a less direct way the limitation of output is conceived to affect wages by providing work for the unemployed. The competition of the unemployed is the great obstacle in the way of raising wages. If work can be found for them, jobs may be made to hunt men instead of men's hunting jobs. If those who are employed work excessively, it is claimed, they selfishly take to themselves work which ought to be left for the less fortunate. To state the case in the converse form, if the output of those who are employed is restricted, room may be made for all who want employment. This is a proposal of kindness and charity; but it is also a proposal of good policy for those who are already at work. If the masters knew that there were no idle hands to take the

place of those they have, they would be anxious to keep their men, and the men rather than the employers would be the dictators of wages. The aggregate share of the product which goes to the wage workers would be increased at the expense of the share which goes to other classes.

Another economic argument is based upon the idea of overproduction. It is because more goods are made than can be bought by people who want to buy them, it is argued, that the mills have to stop working, and widespread industrial depression occurs. So far as restriction of individual output would increase the aggregate share of the wage-earners in the social product, it would modify the tendency to industrial depression, by increasing consumption; for almost all which the wage-earners are able to get is immediately consumed. But, beyond that, overproduction would be directly diminished by so much as each individual worker should diminish his own product.

There is yet another form of economic argument, which seems to be especially prominent in Great Britain, and which doubtless affects in a less degree the policy of some American unions. In it, labor is conceived as a commodity, offered in the market like other commodities. Whatever increases the supply tends to lower the price. But if four men do each a fourth more work than has been customary in the occupation, the effect is exactly the same, it is argued, as if the labor of a new man were thrown upon the market. The market value of each unit of labor will be lowered. Employment will be harder to get, and less regular.

So far as restriction of product is designed to avoid excessive strain and to preserve the health and strength of the workers, the object is legitimate, and the method might be sanctioned if there were no better; but the same end may be attained in another way, which is more advantageous to the worker himself and which offers less ground for condemnation. Deliberate slackening of activity seems directly contrary to the principles of industry, and it alienates the sympathy of every one outside the wage-earning class. Diminution of working hours brings as great physical relief to the worker, and it offers social advantages which men of every class can appreciate. The enjoyment of home, the opportunity for intellectual cultivation, the possibility of stimulating new and higher desires—these things are visible to all and approved by all.

Efforts on the part of employers to restrict output in order to enhance prices are by no means uncommon, although, like similar efforts on the part of workingmen, they are usually disapproved by economists and by the general public. There can be little doubt that in the long run the interests of all classes will best be promoted by making the aggregate production of wealth as great as possible, so long as the workmen are not crowded beyond their strength. Cer-

tainly any general attempt to reduce the efficiency of American labor will check the progress of our industries, and will hamper us in competition with the other great producing nations. The high productivity of our industries at the present time is in part due to the superior methods and machinery used, but also in no small degree to the greater energy and skill of the American laborer. That high degree of energy and skill is the cause, at least in part, of the higher wages which American workingmen usually receive.

ATTITUDE OF LABOR ORGANIZATIONS TOWARD LABOR-SAVING IMPROVEMENTS.

Ever since the era of machine industry began, many, perhaps most, workmen, organized and unorganized alike, have looked at every labor-saving improvement with dislike. In the early days workingmen frequently broke the machines and drove away the inventors and the users. Later, labor organizations in many instances devised rules to shut out machinery when they could, or to diminish its efficiency when they could not shut it out. The experience of a hundred years has shown that machinery can not be kept out, and that its introduction can be little, if at all, retarded by such efforts of workingmen. Actual attempts to keep it out have, therefore, almost ceased, and rules tending to limit the efficiency of improved machinery are rarely found. Such rules regarding the limitation of output as do exist originate mostly in some other purpose than that of hampering the course of invention. Nevertheless the old feeling against improved machinery still exists among a large proportion of the working class, and manifests itself whenever there is a chance for it. The phenomenon is not characteristic of trade unions, but rather of the entire working class.

That improvements in machinery and means of production have been ultimately advantageous to workingmen, as well as to all other classes of society, is a proposition which scarcely requires argument. The immensely rapid improvement in the means of production during the past century meant an immense increase in the available product for distribution. Whatever may be thought as to the equality of the division of this increased product between different classes of society, there is no doubt that the absolute income of the working class has been greatly increased through inventions and improved methods. The most intelligent working people usually recognize this fact. They realize that improved methods tend to reduce the cost of products, and to make them more accessible to workingmen as well as to other consumers. It is also recognized, further, that in many instances the reduction in the price of the product leads to such an increase of demand for it as ultimately to permit the employment of as many persons in the trade as were required before.

Even where there is a recognition among workingmen of the ultimate advantages of labor-saving machinery, their hostile attitude toward the machine is not always abandoned. The key to this puzzle lies in the difference between the "long run" and the "short run." The ultimate effects of an industrial change upon a trade as a whole are one thing; the effects upon the individuals who are working at the trade when the change comes are quite another. The linotype may so cheapen printing as ultimately to increase, or at least not to diminish, the number of printers employed; but if a fourth of the compositors are thrown out of work when the linotype is introduced, they must find means to live while the ultimate result is working itself out.

In two ways the machine may throw the workman out. It may so far "save" or replace the labor of men that less persons will be employed in the industry; or it may save skill, and enable cheaper and less skilled hands to displace the more skillful and expensive. In cotton spinning, the ring frame, worked by women, is crowding out the mule, with its high-skilled male spinners; and in the machine-building trade itself, many operations which formerly required trained mechanics can now be performed by automatic machines with the help of laborers of relatively slight and narrow skill. Similar results have been referred to, in testimony before the Industrial Commission, in wagon manufacture, glass blowing, stonecutting, and iron founding.

Even if the high-grade workman retains his employment, he is likely to find himself subjected to a loss. His skill, at the best, is deprived of some of its value, perhaps a large part, by the introduction of the machine. The hand compositor has a fund of knowledge which will help him if he gets a place at the linotype; but the dexterity of his fingers loses its market value. The hand shoemaker, when his trade began to be supplanted by factory work, had a certain superiority over persons unconnected with the trade if he went into the factory; but he would not have in the factory anything like the advantage which years of apprenticeship and practice had given him in his handicraft.

These considerations, which have often received too little recognition from persons outside the wage-earning class, have always been instinctively recognized, if they have not been clearly formulated, by the wage earners themselves. The interest of the man who sees a machine invading his craft and threatening to rob him of the opportunity to sell his skill is little affected by the results which the introduction of the machine may exert twenty years hence upon society, upon his trade, or even upon his children. He is concerned with getting bread and shelter to-day and to-morrow.

Leaving aside the cases in which the introduction of new machinery or methods results in an absolute lowering of the condition of the workers in an industry, it is the instinctive and universal feeling of

employers, until they have been educated by a long course of controversy, that the workmen ought to be satisfied if they receive the same daily or weekly wage as before. The whole benefit of the increased production, it is assumed, ought to go to the employers, until competition compels the sharing of it among consumers by means of lower prices. The employers are not even ready to take account of any increased strain or increased intensity of work which the machine may call for. The workmen, on the other hand, are likely to assume with equal confidence that the machinery ought not to cause any reduction of the total cost of each unit of product; that is, they assume that the wages paid for the production of each unit ought to be the same as before, less only such an allowance as will compensate the employer for the maintenance of the machinery and for the interest on its cost.[1]

Neither of these assumptions seems capable of being reasonably maintained. A considerable share of the gain ought to go in the first instance to the employer. If he got none, he would have no incentive to introduce the improvements; and so far as competition is really free, the share which he gets will presently cease to remain in his hands, and will thereafter be divided among the consumers. This result will give the widest possible diffusion of the benefits of the improvement; and the attainment of it, at least with regard to some considerable part of the increase of productive power, may be assumed to give the greatest possible social gain.

But this is not to say that the interests of society will be best promoted by throwing the whole gain, first into the hands of the employers, and afterwards into those of the consumers. It is not to say that such a result would serve the ends of justice.

So far as any notion of justice, as applied to rates of wages, can be formulated, it would seem at least to involve the requirement that any increased strain be compensated by increased pay. While the course of improvement tends to narrow the range of necessary skill, and in some cases makes it possible to introduce a lower grade of workers, it often aggravates the actual intensity and strain of the work. There may be an actual increase of physical exertion. The undercutting machines, which are being so rapidly introduced in the bituminous

[1] Mr. Mitchell, president of the United Mine Workers, said in 1901: "I don't believe that a machine-mining price that is based upon any per cent of the pick price is fair. I contend now, as I did last year, that if 7 or 10 or 5 cents a ton will pay for equipping a mine with machines when the price is 49 cents a ton, the same price would pay for equipping a mine if the price for pick mining was a dollar a ton." Mr. Mitchell afterwards said, however, that he did not mean that the operator should have no allowance beyond the cost of the machine. "I want to be quoted exactly. I said 'equipment and maintenance,' and I did not say that ought to be the differential. I said it should be a fixed or stationary differential."—[Report of the Fourth Annual Joint Conference of Coal Miners and Operators of Illinois, Indiana, Ohio, and Pennsylvania, held at Columbus, Ohio, January 31 to February 9, 1901, pp. 58, 61.]

coal mines, have to be held steady by the miner, partly by the strength of his arm and partly by the weight of his body. To hold one of them is said to be far more exhausting than to handle the pick, because of their violent and incessant jar. In general, however, the strain which machinery imposes is the strain of constant, unswerving, and monotonous attention. With every improvement of the mule and the power loom the worker has taken charge of more spindles and more shuttles, and the speed has been increased; and the unanimous assertion of the workmen is that the change has progressively increased the demands of the work. The hand shoemaker, turning from one operation to another as his work progressed, and varying his task with sundry necessary preparations, had a less exhausting day than the shoe-factory operative. The clothing maker, who sits week after week and sews a single seam on each of an endless succession of coats, leads a more nerve-wearing life than the tailor who makes a complete garment. Every such change, by which the physical or the nervous strain of labor is increased, ought, it should seem, to be accompanied with an increase of time wages.

From the social standpoint, justice might also seem to require compensation for the destruction of the value of special skill. When a man has devoted years to the acquirement of an ability, he may be excused for feeling that he has a vested right in his income from the use of it. This feeling, indeed, is at the bottom of the machine-breaking and the other less violent means by which men have undertaken to maintain their hold on work which they have felt belonged to them.

Without acknowledging the validity of this idea, may it not be admitted that a disappointment of the reasonable expectations on which the actions of men have been based is always a social misfortune? It is not a wrong, unless either government or particular men can be held responsible both for the expectations and for the disappointment of them.[1] Yet any means by which such disappoint-

[1] Compensation for workmen who lost their employment, and were obliged to leave their homes, through the exercise of the right of eminent domain, was provided by the legislature of Massachusetts when it established the Metropolitan Water Commission of Boston. The act is perhaps unique in American legislation. It provided that any resident of West Boylston (a village to be destroyed under the act), obliged to seek employment elsewhere by reason of the taking of his employer's plant for reservoir purposes, might within one year file a claim for damages with the Metropolitan Water Commission, and if it was not settled in 60 days might bring a bill in equity in the superior court. Any number of persons might unite in such bill. The court should decree actual damages suffered, not exceeding the sum of the applicant's wages for 6 months at the rate of wages paid him for the last 6 months prior to such suspension of employment. To be entitled to compensation, the claimant must have been continuously employed in the town from the passage of the act "to provide for a metropolitan water supply" to the taking of his employer's property.—[Acts of 1896, ch. 450.]

ment can be minimized—in the present case, any means by which, without checking technical progress, the hardships which progress involves can be made less severe—must be regarded as accordant with the true interests of society.

Finally, the wage-earners are the class of society whose economic position is weakest. This fact alone might justify the opinion that whatever strengthens their economic position is, so far, likely to increase the aggregate strength and to promote the aggregate well-being of society.

Waiving any possible question of changes in laws and social arrangements, by which it might be attempted either to exempt labor from bargain and sale in the market or essentially to alter the market conditions, the only way in which the workmen in a particular trade can, by their own action, avoid the immediate hardship that results from improvement of machinery and methods in their own craft seems to be by united action, taken through some such organization as a trade union. It is believed to be impossible to point out any instance in which unorganized workmen have received any immediate and visible benefit from the introduction of new machinery in their trade. Any number of instances might be pointed out in which they have suffered immediate and visible damage. It has been shown to be possible, however, by wise and united action, to secure a portion of the benefits of machinery for the workmen immediately concerned, while leaving other portions to be divided between the employer and society in general.

Granting the actual introduction of machinery, two main lines of policy in meeting it are open to workingmen and their organizations. The possessors of the skill which the older processes require may undertake to maintain the old processes, in competition with the new, by reducing their rate of pay. This is the course which is likely to be adopted by unorganized and uninstructed workers. It is the course which was followed by the hand weavers of England early in the nineteenth century, and their miserable decay furnishes the classical example of the folly of it. They undertook, by lengthening their hours and increasing their speed, to compete in price with the products of the power loom. As the power loom was progressively improved, the quality of its products rose and the prices of them fell. As the haste of production on the hand loom increased, the quality of its products deteriorated. They lost the individuality and the excellence of construction and finish which had at first given them a superiority of value. The final result was the extinction of hand weaving, after years of hopeless and squalid struggle by the weavers.

The other policy is one which is not practically possible unless the workers act together in some form of organization, nor unless they take from the beginning a far-sighted view of their true interests. It

is one which has been adopted by the printers in the United States and the hand shoemakers in Great Britain. The British shoemakers, the Amalgamated Society of Cordwainers, when shoemaking machinery began to be introduced, steadily refused to lower their prices for hand work, but took into their society all who were employed in the new factories, and advised their old members, so far as they could not get employment at hand work at the old rates, to take work in the factories at whatever they could get. Organizing the factory workers, they helped in the establishment of new standard rates for them: they maintained their own standard rates, and even increased them; and, by turning their attention to the production of the most perfect goods, they have kept a place for themselves in the industrial world, and have not only suffered no loss from the competition of machinery, but have progressively increased their skill, and, along with their skill, their wages.

In this case it ultimately seemed best to let the new machine workers form a union of their own, separate from that of the old handicraftsmen. The latter union maintains itself as a small and compact body of highly skilled workmen. In the most conspicuous example of an analogous policy and an analogous success in the United States the old hand workmen and the new machine men have continued in the same organization, but with results not less successful. The case is that of the International Typographical Union. When the typesetting machines began seriously to threaten the hand compositors, early in the last decade of the nineteenth century, the union adopted the policy of avoiding any opposition to the introduction of machines, and demanding that they be run by union men and under wage scales and conditions of labor fixed by the union. The machines displaced, for the time being, a considerable number of compositors; but many more would have been displaced if the unions, by fighting the machines, had compelled the manning of them with nonunionists. In that case it is probable that comparatively cheap hands would have been employed, and that low rates of wages for them and a long workday would have been established; that the wages of hand compositors, struggling to compete with the machines, would have been lowered, and their hours of labor would have been increased. The actual policy of the union has resulted in the maintenance of the wages of hand compositors, in a gradual lessening of their hours, and in the maintenance for machine operators of even higher wages, on the average, and less hours, than those of the hand printers. More printers are now employed than ever before.

The effects of machinery are absolutely the same as the effects of team work, or of any change by which labor is saved or the productiveness of labor is increased. It is the saving of labor in itself which produces the strictly economic changes, good and bad, that follow the

introduction of machinery. Other changes, such as the increased uniformity, steadiness, and intensity of work, while they are causes rather than effects of economy of labor, are equally attendant on it, whether the economy results from the application of mechanical devices, from more minute division of labor, or from other improvements of the arrangement of work.

INSURANCE BENEFITS OF LABOR ORGANIZATIONS.

The provision of insurance against various contingencies has always been an important feature of trade-union policy. It is strictly subordinate, however, to the primary purpose of affecting the terms and conditions of employment. In some cases, as that of insurance against unemployment, it has a direct bearing upon the primary purpose of unionism. The man who has no resource but his labor must of necessity sell his labor to the first bidder at whatever price is offered, in order to keep himself and those dependent on him from starvation. If the union furnishes subsistence to those who are for the time being unable to obtain employment on such terms as it considers just, it enables them to stand out for the union wages.

Other forms of insurance, like those against death and sickness, do not have so direct and evident a bearing upon trade conditions. It may be argued that the same purpose would be served as well, or even better, by mutual insurance in other societies. In some respects the value of the insurance which a trade union offers is less than the value of similar insurance in an established and well-managed insurance society.[1]

Most labor organizations in the United States do not accumulate any considerable amount of ready cash. They depend upon current assessments for payment of their current liabilities. Even in the exceptional cases in which a considerable reserve exists, there is always the possibility that it may be exhausted in the support of trade disputes. If the death benefit or insurance is considerable in amount, the application of the ordinary actuarial tables would seem to make it entirely certain that with the passage of time the demands upon the treasury by reason of such insurance must vastly increase, and that the increase must be so great as probably to destroy the union.

If there is no disaster, the whole system may at any time be altered, both as to the dues and as to the benefits offered. A member may contribute for years to pay high death benefits to the families of others, and may then find his fellow-members relieved, by a mere vote of the union, from making like contributions for the benefit of his own heirs. Finally, without any change in the rules, he may be expelled

[1] Cases like that of the locomotive engineers, in which insurance is furnished to the members of a labor organization by a separate insurance company or society, are of course not here in view.

years, the payments on account of strikes. In the United States the out-of-work benefit is comparatively unimportant. Only two strictly American national unions have established it. Though it is often paid by local bodies, the importance of it even there is far less than the importance of sick benefits or death benefits.

The death benefit is that which is offered by the greatest number of American national unions—some 40 out of about 100. While a few, as has already been mentioned, pay considerable amounts, the great majority give only from $50 to $200. This is regarded as a mere provision for the extraordinary expenses of death and burial, and is often termed a funeral benefit.

The sick benefit is of far less importance in the finances of the national unions; it is paid by only about a dozen of them. It has, however, a wide extension among the locals. In the nature of the case, it is more suitable for local administration than for control from a distant office. A man's shopmates are the best judges, in many cases, of the reality of his sickness, and the local organization is able to keep a fairly effective watch upon shamming. Those national unions which have adopted a sick benefit have usually provided rules for the detection of imposture, which shows how keenly they feel the probability of it; and the increased chance of fraud, as control is removed to a distance, is doubtless one great reason of the reluctance of the national unions to offer benefits of this sort.

The superannuation benefit, under which men who have attained a certain age and have been a certain time in the organization are entitled to a small pension for life, is not yet paid by any American organization, though one or two have adopted rules which provide for the payment of it in the future. In Great Britain this benefit is an important feature of the trade union system; it is paid by 38 of the principal unions.

The other insurance benefits are of relatively small importance. Several unions pay a lump sum in case of total and permanent disability, and a few insure the tools of their members against loss by fire or accident.

POLITICAL ACTIVITIES OF LABOR ORGANIZATIONS.

Politics, in the sense of partisan activity, is excluded, so far as possible, from labor organizations. One of the commonest rules forbids political and religious discussion in union meetings. This, however, is not meant to stop the attainment of social or economic changes, which are included within the objects of the unions, by political means. It is intended rather to avoid divisions within the unions which might be caused by the introduction of questions not connected with union objects. By preventing, so far as possible, the attach-

ment of the unions to any political party, it serves the further purpose of leaving the way open to appeal to each party in turn, and to support the candidate, without regard to party, who seems most likely to further the union interests.

In Great Britain two great bodies of unionists, the coal miners and the textile operatives, have established somewhat efficient political machinery of their own for the furtherance of their own legislative aims. The miners have for many years been represented in Parliament by their own union officers, and the cotton operatives have perhaps obtained not less valuable representation by their power to influence elections in the cotton manufacturing districts. No similar local power, and no similar direct representation in Congress or other legislative bodies, has been attained by any American union. This is not to say, however, that the influence of the unions upon legislation has been slight.

All the later laws for the lessening of hours, both those applying to servants of the general and the local governments and those applying to workers in particular occupations, or to trades in general, may be largely credited to the labor organizations. The general restrictions of immigration may also be accounted their work, though the special laws against Chinese immigration, while fully approved by them, have grown out of an agitation for which they were not primarily responsible. The existence of the whole body of factory legislation, and the creation of State and national bureaus of labor statistics, and of boards of mediation and arbitration, are largely due to their support, even if it would be too much to credit such legislation, as a mass, to their initiative.

The American Federation of Labor has its legislative committee, which is active at every session of Congress in promoting particular measures which the Federation as a body desires to see passed. The several trade unions, for the most part, give little direct and active attention to legislative matters, even regarding their own trades. The International Typographical Union has for several years conducted an active campaign in favor of Government ownership of the telegraph. Its activity is based on the idea that the existing private telegraph monopoly, through its alleged fostering of a monopoly of news gathering, interferes with the establishment of newspapers, and so restricts the demand for printers. The marine engineers, whose occupation is largely and directly affected by the laws of Congress regarding shipping and regarding the licensing of engineers, have been active in promoting legislation directly bearing upon their interests. The Knights of Labor for many years maintained a legislative committee at Washington. The railroad brotherhoods now keep a legislative representative there during each session of Congress.

The railroad brotherhoods have probably a more effective machinery for influencing legislation than any union in any other occupation—perhaps a more elaborate machinery than even the Federation of Labor. The engineers, the firemen, the conductors, the trainmen, and the telegraphers have their legislative committees in many States, and in some States, where such committees have been organized by several or all of the brotherhoods, they act together through joint legislative boards. In such States as New York, Pennsylvania, Indiana, and Texas, strong lobbies have from time to time been maintained by the brotherhoods, sometimes throughout the legislative sessions. Their expenses are met by regular assessments, levied by the committees themselves upon the members of the several brotherhoods within their States. The activities of these bodies are limited to legislation bearing on the interests of their constituents as railroad men. Legislation in regard to public control of railroads comes within their sphere. Thus in 1899 the joint legislative board in Indiana undertook to promote a bill for a State railroad and warehouse commission, based on the laws of Illinois, Ohio, Michigan, and Pennsylvania. Some attempt has been made by such boards to secure united action on the part of the members of the brotherhoods in the election of members of the legislature.

A marked tendency appears, in the political action of the unions, to promote such legislation as may be expected indirectly to benefit the members of the trades, through benefiting their employers. Thus some of the railroad brotherhoods have supported the various "anti-scalping" bills, or measures forbidding the buying and selling of railroad passenger tickets. The organization of the brewery workers tried to induce the convention of the American Federation of Labor, in 1900, to pass a resolution in favor of a reduction of the internal-revenue tax on beer. To the same category, perhaps, should be referred the activity of a few unions, in highly protected and closely organized industries—such unions as the Amalgamated Association of Iron, Steel, and Tin Workers, and the unions in the glass trades—in favor of the protective tariff.

The principal activity of the unions in legislative matters has naturally been directed to subjects of immediate interest to them, such as the shortening of the legal workday and the requirement of one day's rest in seven; the restriction of woman and child labor, and other restrictive laws regarding factories and workshops; and the restriction of immigration. The unions of the several trades scarcely meddle at all with public questions, except questions of this sort. The American Federation of Labor, however, through its convention, indulges in many expressions of political opinion. As a rule it avoids expressing judgments upon matters which have become subjects of controversy

between the great political parties. It has not, however, adhered to this rule quite consistently. For several years it annually passed a resolution in favor of the free coinage of silver at the ratio of 16 to 1; and in December, 1896, after a Presidential campaign had been fought upon this question, it reiterated its former declarations, though not without strong opposition. It has repeatedly pronounced against ship subsidies; it has declared in favor of public ownership of railroads, telegraphs, and other institutions which have come to be classed as public utilities; it declared against the increase of the standing army, and against the whole policy of expansion; it condemned the decision of the Supreme Court against the income tax; it has declared in favor of woman suffrage, and in favor of the election of United States Senators and of the President by direct vote of the people. On all these questions, however, its action has not gone beyond a mere expression of opinion. It has made no organized effort actively to promote the opinions which it has espoused; and the holding of divergent opinions is not regarded as inconsistent with the highest positions in the organization.

In a local way a great deal of attention has been given by the labor organizations to influencing municipal governments to pay union rates of wages, to lessen working hours, to employ only union workers, and to let municipal contracts only to persons who employ no non-union labor and who maintain union conditions. It is an easy transition from such activities to the securing of political office for local labor leaders. When a man has attained such prominence in labor circles that his influence seems likely to control a considerable vote, offers of political preferment are sure to come to him. The introduction of politics, in the sense of personal ambitions, is likely to have unfortunate effects upon the welfare of the organizations.

COLLECTIVE BARGAINING, CONCILIATION, AND ARBITRATION.

GENERAL NATURE OF THE PRACTICES.

The Industrial Commission has recognized the very general feeling on the part of the people that strikes and lockouts are in many instances unduly expensive methods of settling differences, and that they too frequently injure greatly the welfare of large bodies of the people, as well as that of the parties in dispute. The Commission has, therefore, investigated very thoroughly the methods employed for promoting industrial peace, both in the United States and in foreign countries, and has considered various proposals for the extension of these methods, either by legislation or by voluntary action of organizations of employers and employees.

It is believed that no little confusion exists in many quarters as to the precise nature of the methods which have been introduced for securing peaceful settlements of differences relating to labor. The terms used in describing these practices are often misapplied. It is necessary, in order to understand clearly the methods under consideration, to bear in mind continually the distinction between the two fundamental classes of industrial differences:

(1) Those which concern the interpretation of the existing labor contract, or terms of employment, and which usually are of a relatively minor character.

(2) Those which have to do with the general terms of the future labor contract, and which are usually more important.

This distinction between these two classes of disputes is in theory a sharp one, although in practice not a few disputes arise which it would be difficult to classify strictly under the one head or the other. It is evident that most differences between employers and employees belong to the first class. Only at rather long intervals do changes in business conditions, or in the relative strength of employers and employees, give occasion for raising the question as to the general terms on which labor shall be performed. The settlement of such general questions may be considered, in a sense, an act of legislation. On the other hand, differences very frequently arise as to the application of the general terms to specific cases, as to interpretation, and these differences may properly enough be adjusted by procedure of a more or less judicial character.

With these distinctions in mind, it is possible to get a fairly correct idea of the actual nature of the processes by which disputes may be adjusted.

Collective bargaining may be defined as the process by which the general labor contract itself is agreed upon by negotiation directly between employers, or employers' associations, and organized workingmen.

This term, collective bargaining, is not often employed in common speech in the United States, but is gradually coming into use among employers and employees in Great Britain. It evidently describes quite accurately the practice by which employers and employees in conference, from time to time, agree upon the terms under which labor shall be performed. The process is not one of arbitration, nor does the term conciliation, especially as used in regard to other than labor matters, convey a clear idea of it. It should be clearly understood that the process by which employers and employees, directly and without the intervention of outside parties, agree upon the terms of the labor contract is precisely similar in nature to the process of bargaining between two parties regarding any other contract.

Collective bargaining in order to attain success, or indeed to have

any real significance, must be conducted by and between organizations of fair-minded working people having honest, intelligent, and conservative leaders, and employers who are also honest, conservative, and fair minded.

Wherever these conditions are absent on both sides, or either, further education and development of wholesome sentiment may be necessary to get satisfactory results by means of collective bargaining.

The more formal systems of collective bargaining involve more or less regularly recurrent conferences between representatives of employers and of employees. The practice is therefore often called by such terms as *joint conferences*, joint committees, or joint boards. In Great Britain the term *wages boards* is especially common. Very frequently negotiations of this sort result in written agreements regarding the conditions of labor, and the practice is sometimes termed the *agreement system.*

Conciliation is a term which in Great Britain is very commonly used to designate the settlement of disputes, especially those relating to the interpretation of the labor contract, either by direct negotiations between the employers and employees concerned, or by the action of joint boards representing the organizations to which they belong. The word is sometimes employed in the United States in a similar sense. It is perhaps best to distinguish clearly between collective bargaining and conciliation by confining the scope of the latter term to negotiation as to matters of interpretation. In the United States, also, State boards of arbitration and mediation not infrequently speak of their action, in endeavoring to influence the parties involved in labor disputes to reach an amicable settlement, as conciliation. The word *mediation* may be more accurately employed to describe such informal intervention of an outside person or body.

The word *arbitration* may properly be applied only to the authoritative decision of issues, as to which the parties have failed to agree, by some person or persons not directly concerned. The term is most strictly applicable to those cases where differences are decided by persons outside the trade. As a matter of fact boards consisting of an equal number of representatives of organizations of employers and employees, respectively, and having power to render binding decisions, are in the United States usually, and with reasonable correctness, called arbitration boards or arbitration committees, although in Great Britain they are more frequently called boards of conciliation. In both countries, where provision is made for the reference of matters as to which these trade representatives themselves can not agree to some outside person, he is usually called an *umpire.* Of course a large part of the work of such joint boards is in the nature of mediation and conciliation, in bringing the parties to an understanding, without the need of rendering an authoritative decision. Employers and work-

ingmen in the United States frequently use the word arbitration in a sense much broader than that which properly belongs to it, applying it to almost any form of negotiation between employers and employees or their representatives.

Arbitration, in the proper sense, may be employed with regard to either disputes relating to the general labor contract or those relating to matters of interpretation. In practice minor matters are much more apt than general matters to be referred to arbitrators outside the trade or to small joint trade boards. General matters are oftener determined by conferences of a comparatively large number of representatives of the employers and the employees.

LOCAL SYSTEMS OF COLLECTIVE BARGAINING, CONCILIATION, AND TRADE ARBITRATION.

The investigations of the Commission[1] show that the methods of collective bargaining, conciliation, and arbitration actually employed in the United States take on a wide variety of forms. They range from the most informal and merely occasional conferences and negotiations between individual employers and their employees, up to systems established by permanent agreement between organizations on each side, and providing for regularly constituted bodies with definitely prescribed powers.

It is the usual policy of labor organizations, in the absence of more formal systems of collective bargaining, conciliation, or arbitration, to endeavor to negotiate informally with employers regarding both the general conditions of labor and matters of interpretation. Wherever employers recognize labor organizations and deal with their duly constituted representatives at all, we have a certain stage of collective bargaining or of conciliation. It is, however, evident that peaceful relations are more likely to be maintained where these practices are more formally established; where they become the ordinary and expected thing. Very considerable progress has been made in this direction.

In a very large number of trades in the United States the conditions of labor in particular establishments and localities are determined by local written agreements between employers or employers' associations and labor organizations. These agreements in many instances represent little more than forced concessions on the part of one side or the other; but in many other cases they result from genuine collective bargaining, from friendly conferences between employers and labor unions. They usually cover an annual period, but sometimes are either indefinite, or continue for two, three, or even five years. A large

[1] Systems of collective bargaining and arbitration are described in detail in Reports Industrial Commission, Vol. XVII.

majority of such agreements are made between individual employers and labor organizations. Agreements of this sort are apt to be less formal and detailed, and to represent to a less degree the outcome of collective bargaining, than those between organizations of employers and organizations of workingmen.

It is a fact, repeatedly emphasized and very generally lamented by employers, and often by workingmen as well, that the organization of employers in the United States has as yet become much less extended than the organization of labor. Employers' associations are most numerous and vigorous in the various building trades, where the strength of the labor organizations, and the fact that the employers are very numerous and, in many instances, have comparatively small establishments, have contributed to make organization a necessity. In not a few localities organizations of employers are also found in other trades, such as in the brewing industry, the stone cutting and woodworking trades, etc. In a large proportion of cases where such associations exist among employers, we find them entering into collective bargaining and agreements with labor unions.

If written agreements are made with individual employers, there is evidently no especial occasion for the establishment of formal methods of organizing or conducting the conferences by which they are adopted. The union simply selects its best representatives to negotiate with the employer, and bargaining is continued until a settlement is reached. Where organizations of employers enter into agreements, however, the collective bargaining must naturally be conducted by properly chosen representatives of both parties. In most cases, the selection of these representatives is governed by the rules of the separate organizations, and not by any joint agreement or constitution. Occasionally joint committees or conferences, with power to adopt agreements, are established and regulated by a formal agreement. In quite a few cases the same "arbitration committee," which has authority to decide minor matters of interpretation as to the labor contract, also meets for the discussion of the terms of new agreements. More often there is no attempt systematically to organize the joint conferences by which agreements as to the conditions of labor are adopted.

There is, for instance, usually no requirement that the number of representatives of the respective sides shall be equal, and no provision for formal voting or for action by a majority. The process of reaching an agreement is chiefly one of "higgling," prolonged until a compromise satisfactory to both sides is reached. Usually the representatives of the local organizations of employers, and particularly of employees, have no power to reach binding agreements without reference to their constituent bodies. Complaint is sometimes made on each side of the irresponsibility of the committees of the other side. Nevertheless, even where authority to reach binding agreements is not

definitely given to the conferees, the terms of settlement which they reach are quite generally accepted by the respective organizations.

It is to be noted also that in very few of these local systems of collective bargaining are the general terms of the labor contract referred to independent arbitrators, in case of failure on the part of the representatives of the employers and employees to reach an agreement. While minor matters of interpretation are frequently submitted to impartial umpires, the general feeling of employers and employees seems to be opposed to the decision of important matters except by those actually interested. One of the few exceptions is found in Boston, where permanent agreements exist between the mason builders' association on the one hand and various local unions in the building trades on the other hand. Under these agreements a permanent committee is constituted in each trade, composed of an equal number of employers and employees. This committee adopts annual agreements regarding the general conditions of labor, and also decides minor matters of dispute. As to either class of questions it can act by a majority vote, and if a settlement is not reached appeal may be taken to an impartial umpire. In practice, however, the umpire has been called upon in only a very few instances.

While thus local collective bargaining as to the general conditions of labor is seldom carried on by any very formal system, a large proportion of the local agreements themselves provide more or less formal methods of conciliation and arbitration, as regards minor disputes concerning the interpretation of their terms, usually by joint "arbitration committees." Such committees are either temporary—being chosen by the parties to a particular dispute—or, somewhat less commonly, they are permanent, being chosen by the parties to the agreement as such, and having authority to settle all disputes arising during their term of office. Such permanent committees are found especially in those trades where both employers and employees are strongly organized.

In both temporary and permanent committees each side is usually represented by one, two, or three persons, although occasionally the number is larger. Almost invariably in these local systems there is provision for the selection of an impartial umpire, usually by agreement between the other members of the arbitration committee. Sometimes such umpires are selected only after failure of the trade members of the board to reach a settlement. In other cases, especially in the more highly developed systems, they are selected in advance for the entire term of the board itself. Even in the latter case the umpire is usually called in only in case the members representing the parties themselves fail to agree, or to reach a decision by a majority vote. As a matter of fact the action of these arbitration committees in most cases is rather in the nature of conciliation, by which the disputants are led to agree among themselves, than in the nature of rendering

formal decisions. In practice also umpires are comparatively seldom called in.

Written agreements usually provide that arbitration committees shall have no authority to modify any specific clause of the agreement itself. In other words, the arbitration committee is confined to judicial action, to interpretation, and has no legislative power. Pending the action of the committee regarding such minor matters, strikes and lockouts are, by the terms of practically all agreements which provide for arbitration, prohibited. Moreover the decisions of the committee or of the umpire are binding upon the parties. In most cases, to be sure, there are no provisions as to the method of enforcing a decision in case the parties refuse to abide by it. None of these trade arbitration committees, so far as can be ascertained, is constituted under the terms of those laws which, in a few States, permit the voluntary formation of boards which may render legally binding decisions. Organizations of employers and employees, however, can usually bring great pressure to bear upon their individual members to abide by decisions of arbitrators. In a few instances local agreements definitely provide for fining those who refuse to carry out such decisions. Of course if the organization entering into the agreement refuses as an organization to be bound by the awards of arbitrators, there is no recourse.

It occasionally happens that, although no general agreement or understanding between employers and employees provides in advance for the settlement of disputes by arbitration, the parties to a particular dispute submit it to arbitration by some impartial person. Usually this is the case only after a prolonged struggle, when the disputants either feel exhausted or are forced by the influence of public opinion to resort to some peaceful method of settling their differences. In a few instances in recent years prominent persons have endeavored to mediate in disputes, but usually with comparatively little success.

SYSTEMS OF NATIONAL OR GENERAL SCOPE.

In ten or twelve leading trades in the United States systems of collective bargaining or of arbitration, or both, have been adopted, which are national in their scope, or which cover a very considerable proportion of the trade throughout the country. Many of these systems are of very recent introduction and have not perhaps been worked out to their ultimate form. Most of them do not rest upon permanent agreements between employers and employees, and have no permanent constitutions and rules. Nevertheless, in those trades where these practices have been longest continued, fairly uniform and systematic methods have been developed, which are governed either by unwritten custom or by the rules of the separate organizations of employers and employees. In Great Britain such wide-reaching systems of collective bargaining and arbitration date from a much earlier time, and are

found in a very much larger number of trades than in America. Moreover, in that country these practices are very generally conducted under formal and permanent constitutions and rules.

In most of the national systems in the United States, there is a fairly clear recognition of the distinction between collective bargaining for the determination of the general conditions of the labor contract, and conciliation or arbitration for the settlement of differences relating to its interpretation. The systems in several important trades have to do chiefly with collective bargaining and the adoption of trade agreements, and only incidentally with the settlement of differences of interpretation. These are the iron and steel, tin plate, bituminous coal mining, stove molding, longshore and pottery trades, and the various glass trades. Only in the case of the stove foundry trade do we find the same joint board empowered to make general agreements regarding the conditions of labor and also to determine minor questions. National systems of arbitration without provision for national collective bargaining have been adopted in the general foundry trade, in the printing trade (between the American Newspaper Publishers' Association and the International Typographical Union), and in the machinists' trade. The latter system, however, lasted only a single year, when it was interrupted by the machinists' strike of 1901.

In Great Britain the distinction between authorities having to do with the general conditions of the labor contract and those having to do with matters of interpretation, is maintained in some trades, but in others a single joint board or conference exists with power to determine both classes of questions.

National collective bargaining necessarily involves strong and systematic organization on both sides. Neither employers nor working men are willing that the conditions of labor in a given locality or establishment should be determined by a central authority, unless that authority be thoroughly representative of all whose interests will be affected. Again, collective bargaining on a wide-reaching scale is practicable only in trades where there is a certain general similarity of conditions throughout the country or throughout large sections. It is especially desirable only in trades where the products of different localities compete in the same general market.

There can be no doubt that great advantage would be secured by extending the scope of the system wherever conditions are favorable. On the other hand, there is little if any room for national trade agreements, for example, in the building trades, where the work of employers and men manifests itself in a result confined to the particular locality. The great advantage which is claimed for wide-reaching collective bargaining, in trades where there is competition in the general market, is the equalizing of cost of production and of the conditions of labor, in such a way that manufacturers in no one locality can secure

an advantage over those elsewhere by cutting wages or otherwise granting less favorable conditions to their employees.

Little uniformity of organization and procedure is found in national systems of collective bargaining in the United States. Each trade which has developed the practice has usually done so more or less independently of the influence of the experience of other trades. Nevertheless the conditions to be met in all the trades have a general similarity. The object to be sought is, in each case, primarily the reaching of an agreement regarding the terms of the labor contract by a process of bargaining. Certain generally similar customs are therefore found growing directly out of the nature of this task.

Thus, it is usually true that no insistence is laid upon securing equal representation of employers and employees in the conferences by which joint agreements are adopted. Action is not ordinarily taken by formal votes, but by negotiations and "higgling." The rules of the interstate conferences in the coal industry, for example, specifically declare that no important action may be taken except by unanimous vote. Even where, as in the glass trades, conferences are ordinarily composed of an equal number of representatives of each side, and action by majority vote is nominally permissible, in practice the adoption of an agreement is brought about in almost every case rather by negotiation, resulting ultimately in a compromise satisfactory to both sides. In Great Britain it is somewhat more common to find provision for action by a majority vote, even as regards general matters; but here again, in actual practice, formal votes are not usually taken.

It is a conspicuous fact, in regard to all the national systems of collective bargaining in the United States, that no provision is made for calling in impartial umpires to decide general questions as to which the representatives of the parties in conference can not agree. In Great Britain the constitutions of many joint boards which have authority as regards general matters permit appeal to outside persons in extreme cases, but it is very rare, indeed, that such appeal is actually taken.

In most of the wide-reaching systems of collective bargaining in the United States the joint conferences are composed of a comparatively large number of representatives of the respective organizations of employers and employees. The interstate convention of miners and coal operators, which adopts the annual agreements covering the conditions of labor in the bituminous mines of western Pennsylvania, Ohio, Indiana, and Illinois, is composed of several hundred operators and miners, although the actual preparation of the agreements is usually intrusted to a scale committee consisting of sixteen members on each side. The various State conferences in this trade are also composed of many delegates. The conferences in the glass, iron and steel,

and 'longshore industries are composed of from ten to forty or more representatives of each organization. Only in the stove-foundry trade is the conference committee a body of small size, only four members on each side. The object in making the number of conferees large is to render them as thoroughly representative of the desires and conditions of the various localities as possible. It seems to be generally the case in Great Britain also that joint boards, endowed with the authority to decide the terms of the general labor contract, are composed of a considerable number of persons.

In the absence of formal and permanent constitutions for the joint conferences of employers and employees, there is naturally no definite rule regarding the authority of the delegates in conference to bind the organizations which they represent. In some cases the rules of the separate organizations themselves give authority to conferees to make binding agreements. In various other trades, however, notably in the iron and steel and the glass trades, the conferees, at least those representing the labor organizations, are given only limited authority. They are instructed in advance by their organizations. If they fail to secure the concessions desired, reference to a general convention of the union or to a referendum vote is required by the rules. In practice the action of conferees in these trades is quite generally upheld by the labor organizations, and, indeed, they are often given in specific cases the authority to make such compromises as seem to them necessary.

As already intimated, the national systems of collective bargaining which have just been described, with the exception of that in the stove-foundry trade, do not formally provide for the settlement by national authorities of minor disputes relating to the interpretation of the labor contract. It is true that, where the general conditions of the labor contract are determined by written agreements made in amicable conference, there are likely to be fewer occasions for dispute as to interpretation than would arise in the absence of such agreements. In most of the trades under consideration we find reasonably effective local machinery for the settlement of such minor disputes. Such local machinery does not usually rest upon definite agreements between employers and employees, but is either a matter of custom or governed by the rules of the separate organizations. Usually the rules of the labor organizations which take part in these national systems of collective bargaining provide that the national executive officers shall take up with employers or employers' organizations any difference which can not be locally settled. In one or two of the glass trades minor matters may be carried, on appeal, to the same conference committee which establishes the general agreements as to the conditions of labor.

The agreements between the 'longshoremen's association and some of the organizations of employers of different classes on the Great Lakes provide for the settlement of each particular dispute, on minor matters, by arbitrators selected by the local union and the employer concerned. Somewhat similar provisions have been adopted in some of the State agreements between the United Mine Workers and the bituminous coal operators. In Illinois a much more thoroughgoing system of conciliation and arbitration has been adopted between the recently organized Illinois Coal Operators' Association and the miners. The State agreement prohibits strikes or lockouts until after the failure of every step in negotiation, short of calling in arbitrators from outside the trade, a practice which is not approved. The Illinois Coal Operators' Association has established a commissioner whose sole function is to take part in the settlement of disputes. In a few instances matters have been referred to the authoritative decision of this commissioner, in conjunction with the president of the national organization of the United Mine Workers.

As above stated, there are now three trades in which formal systems of arbitration and conciliation on a national scale have been adopted by standing agreement. The most important of these systems are in the stove-foundry trade and the general foundry trade. That recently established in the printing trade is much less general in its scope, and as yet there has been no significant experience in its operation. In the two trades first named the rules declare that the parties to disputes shall first endeavor to reach an amicable understanding between themselves. Failing to do so, they may appeal to local or district boards of conciliation and arbitration. The final appeal is to a committee consisting of the president, and two or three other representatives, of the respective national organizations of employers and employees. In both of these trades the national arbitration committee may act by a majority vote, but in neither is there any provision for calling in an outside umpire in case of failure to reach a settlement, and this practice is strongly opposed by both employers and men. The system until recently in existence in the machinists' trade was very similar.

In the stove-foundry trade the same committee which arbitrates on minor matters fixes also the national wage scale. In the foundry trade the terms of the general labor contract are to a considerable extent determined by local collective bargaining. No attempt has been made as yet to establish national trade agreements, although there seems to be a movement in this direction. Nominally no limitation is put upon the scope of the questions which may be appealed to the national board of arbitration, and some matters of a general character may from time to time be determined by that board.

ADVANTAGES OF COLLECTIVE BARGAINING.

Whatever may be thought of the desirability of legislation regarding the settlement of labor disputes, there is a general consensus of opinion that the voluntary extension and perfection of systems of collective bargaining, conciliation, and arbitration within the various trades themselves would prove highly advantageous, both to employers and working men, and to the general public. These practices are not indeed equally applicable to all trades and localities. Thus it is quite commonly asserted that, in the absence of reasonably strong organization among working men, they can neither sufficiently command the respect of employers, nor exercise a sufficiently strong aggregate control over individual employees, to make collective bargaining and arbitration practicable. To insure success there must be on each side approximately equal strength, a fairly high degree of intelligence, and a disposition to fairness and to businesslike methods.

The chief advantage which comes from the practice of periodically determining the conditions of labor by collective bargaining directly between employers and employees is, that thereby each side obtains a better understanding of the actual state of the industry, of the conditions which confront the other side, and of the motives which influence it. Most strikes and lockouts would not occur if each party understood exactly the position of the other. Where representatives of employers and employees can meet personally together and discuss all the considerations on which the wage scale and the conditions of labor should be based, a satisfactory agreement can, in the great majority of instances, be reached.

The system of collective bargaining is also highly advantageous in removing the occasions of minor misunderstandings and in facilitating the correction of them. A large proportion of labor disputes originate in very unimportant matters. In the absence of the machinery and the habitude of peaceful discussion, misunderstanding grows into bitterness, and too often a prolonged cessation of employment results. Where the general conditions of labor are carefully prescribed in written agreements as the result of collective bargaining, there is much less chance for differences of interpretation, for misunderstandings, and friction, while when differences do arise a spirit is likely to exist which makes amicable adjustment of them possible.

Finally, it should be observed that the success of systems of collective bargaining is usually cumulative. The practice of meeting together in friendly conference develops into a habit. There is a constantly increasing mutual understanding and mutual respect between employers and employees. Those who have had the most experience with this practice repeatedly speak in the highest terms of the ability and the moderation which they have found on the part of those whom they

had too often in earlier times looked upon as in a sense enemies. The distinction of superiority and inferiority is more and more forgotten, as such democratic methods of adjusting labor questions are developed. Employers and employees meet and bargain as business men do regarding other than labor matters—as equals. It must be thoroughly understood that collective bargaining and arbitration are primarily matters of business and not of sentiment, but the moral effect of these practices on those concerned is nevertheless a highly important one.

It is not to be supposed that the introduction of joint conferences and arbitration committees in a trade will render strikes and lockouts thereafter impossible. Those who take part in these methods are still human, and each side may insist on its position with such stubbornness that no agreement can be reached. The recent great strike of the Amalgamated Association shows that collective bargaining does not always result in peaceful settlement. In Great Britain long-established systems of conferences and arbitration have sometimes been temporarily or even permanently broken up. Nevertheless experience both in England and in our own country shows that where these practices have once become fairly well established they greatly reduce the number of strikes and lockouts, and in many trades do away with them altogether for long periods of time. Even when a cessation of employment does intervene, the experience of the beneficial effects of peaceful methods usually leads to their reestablishment, as is witnessed by the settlement in the iron and steel strike of 1901.

METHODS OF COLLECTIVE BARGAINING.

Methods of collective bargaining and of trade conciliation and arbitration must necessarily be adapted to the wide variety of conditions which exist in different trades and localities. No one system can be set up as the ideal one, equally applicable to all cases. In the judgment of the Industrial Commission, however, success in securing peaceful relations between employers and employees will be greatly enhanced by a due regard to the distinction above emphasized between differences as to the terms of the general labor contract and differences regarding the interpretation of that contract. While it is not in every case necessary that there should be entirely separate machinery for each class of questions, there is little doubt that under many circumstances such separation is desirable, especially with the object of securing economy of time and effort.

It is the common opinion of those who have had experience in collective bargaining, as well as of those who have considered the problem from the broad economic standpoint, that questions relating to the general labor contract are usually best settled by conferences composed of relatively large numbers of representatives of employers and

of employees. The proper number must, of course, depend on the number of persons affected by the system and on various other conditions. As the scope of the system extends, more and more attention must be paid to proper representation of the employers and men concerned. Only thus can the different local conditions, interests, and desires receive proper consideration. Only thus can there be a thorough understanding throughout the trade of the general conditions and motives which have led to the adoption of the terms of the agreement. Moreover, where the conferences are thoroughly representative, the inconvenience and delay of referring differences to conventions of the separate organizations or to a referendum vote may be avoided. By having a large number of conferees, too, the habit and spirit of peaceful negotiations tend to be more generally spread throughout the great body of employers and employees.

Experience seems to show that it is not a necessary condition of success in collective bargaining that it should be conducted by formally constituted and regularly recurrent conferences. In Great Britain, in some trades, very successful collective bargaining, even on a wide-reaching scale, takes place by merely occasional conferences between representatives of employers and of employees, who are not chosen under any formal rules and who act in accordance with no fixed procedure. Nevertheless, in many trades it is desirable that such conferences should be held at regular intervals. In numerous industries each year is likely to bring new conditions of business to which the terms of the labor contract must be adjusted. Another advantage of regularly recurrent conferences over those which are merely occasional is that employers and employees come to feel that it is a matter of course, the thing to be expected, that all changes in the terms of labor shall be made by friendly negotiation. In some trades where the conditions do not change frequently, however, particularly if there is a general disposition on the part of employers and of employees to settle all differences by collective bargaining, it may be best not to incur the trouble and expense of too frequent conferences.

In the general opinion of those who have given most thought to the matter, it is advantageous that conferences for collective bargaining shall be informally conducted. Some degree of system, of course, there must be. It is believed, however, that the terms of the agreement as to the conditions of labor should not ordinarily be determined by vote, certainly not by bare majority vote, but should rather be reached by negotiations and mutual concessions leading to practical unanimity. It seems also very doubtful whether it is wise to provide in advance for the submission of all important matters, as to which joint conferences fail to agree, to the decision of outside arbitrators.

The reasons in favor of the positions suggested in the preceding three paragraphs are fairly obvious, and are quite generally recognized by

those who have had most experience in collective bargaining. It must not be forgotten that the system is primarily one of bargaining, that it concerns often the general welfare of many establishments and a multitude of men, and that no agreement is likely to be successfully enforced which does not meet with the approval of the bodies of employers and of employees concerned. It is especially urged against the practice of submitting important questions regarding the general terms of the labor contract to outside arbitrators, that no person outside the trade has the necessary technical knowledge on which to base a reasonable decision. No determination is a proper one which disregards such fundamental elements as the relative strength of employers and employees, the conditions of competition within the trade and of competition from other sections or other countries, and many other circumstances which can not be known to the outsider. There is, indeed, no universally accepted principle of justice which can be applied in determining precisely the proper conditions of the labor contract. It is asserted that outside arbitrators are too often inclined to "split the difference" in the matter of wages, whereas a just decision would rather in many cases be strictly in favor of the position taken by the one side or the other. Finally, opponents of the practice of referring general questions to those outside the trade often declare that arbitrators are not likely to be able to overcome wholly certain inherent prejudices, the outcome of their training and environment. Workingmen especially complain of the difficulty of getting strictly impartial arbitrators.

As is pointed out under the next head, those who disapprove the reference of questions relating to the general labor contract to outside arbitrators do not usually extend their opposition to the practice of calling in such arbitrators to decide minor matters of interpretation. Many persons, and among them not a few employers and employees, also believe that, as a last resort, after failure of all efforts to settle differences regarding general matters within the trade, it is better to submit to the decision of an impartial umpire than to permit a strike or lockout. Even though the decision should prove not altogether satisfactory, it is held that greater advantage to both sides would result from accepting it loyally than from cessation of employment with its attendant losses.

ADVANTAGES OF TRADE ARBITRATION AND CONCILIATION.

Conciliation and arbitration go hand in hand with collective bargaining. If the general conditions of labor are dictated by the employer without consulting his men, or if they are dictated by strong labor organizations, there is little room for arbitration and conciliation. Where, however, employers and employees are accustomed, whether formally or informally, whether occasionally or at regular

intervals, to discuss in friendly conference the general terms of th labor contract, a spirit is developed which makes it likely that ind vidual employers and their employees will also discuss in a conciliz tory fashion minor differences as to the interpretation of that contrac or will be willing to submit these differences to the decision of arbi trators. In most cases a satisfactory settlement of such minor differ ences may be brought about by the parties themselves if once they are discussed in an amicable manner. If this proves impossible, it i highly desirable that appeal should be made first, not to those wholly outside the trade, but to a board composed of an equal number of rep resentatives of employers and employees; who, while themselves no directly concerned, and therefore largely free from the bias and per sonal feeling which may exist between the disputants, are yet thor oughly familiar with the trade conditions and probably personally acquainted with the parties to the dispute.

Trade boards of conciliation and arbitration have, therefore, an exceedingly important place. In the great majority of cases their work is and should be that of mediation and conciliation rather than of authoritative decision. Misunderstandings, which are so often the only source of industrial disputes, can usually be removed by friendly discussion between the parties and the members of the board, while even more serious matters of difference can often be settled by mutual agreement in this informal manner.

METHODS OF ARBITRATION AND CONCILIATION.

It is commonly believed by those who are most experienced that such trade boards of conciliation and arbitration should be established for definite periods of time, with authority regarding all disputes which arise during that period, rather than that a separate board should be instituted for each particular dispute. The existence of a permanent tribunal constantly at hand impresses employers and employees with the idea that resort to it is the proper and expected thing, while at the same time the delay and inconvenience of constituting a new board is avoided. Moreover, the members of a permanent board acquire experience, particularly if reelected, and this experience is a most valuable aid in enabling them to conciliate or arbitrate successfully.

In trades where national organizations of employers and employees exist, and especially if national collective bargaining is carried on, there is evidently a great advantage in having a national trade board of arbitration to which disputes may ultimately be appealed. Nevertheless, even in such trades it is desirable that minor disputes should ordinarily be settled by local machinery without the delay of appeal to a central authority, and, wherever possible, between employers and employees without appeal to formal arbitration.

While the chief function of trade boards is that of mediation and conciliation, they should, it is believed, also have the power to render authoritative decisions in case of necessity. If collective bargaining is to be effective, trade agreements must be carried out by collective authority. Labor organizations and organizations of employers, where they exist, must, so far as practicable, compel their members to live up to the terms of the agreements. Individuals, when they enter into a system of collective bargaining, necessarily surrender their freedom to act according to their own caprice in regard to labor matters. The decisions of arbitrators, where they are merely the interpretation of the terms of the agreement, should have as much binding force as the agreement itself. In most cases there is little disposition to disobey the decisions of joint boards where the representatives of the employers and of the employees on the boards agree in the positions taken. Whatever the decision, each side is inclined to consider it at least reasonably just if its own chosen representatives have consented to it.

Quite a different problem presents itself, however, where the representatives of the two sides on boards of arbitration fail to agree in a decision. While both employers and workingmen are frequently opposed to calling in outside umpires to consider general questions, they are quite often willing to turn to them as a last resort for the decision of matters of interpretation; and most local systems of arbitration in the United States, as well as more wide-reaching systems in England, provide for reference of such questions to disinterested persons. Sometimes prejudice, and even bitterness, regarding questions of interpretation extend to the trade members of boards of arbitration themselves, and prevent them from considering the points at issue fairly and logically. Some person outside the trade, even though perhaps ignorant of many of its conditions, may, under such circumstances, render a reasonably correct decision, and prevent the cessation of employment and the still more serious injury which would result from the breaking up of the system of collective bargaining and agreements.

The question whether it is desirable by legislation to make trade agreements, as well as the decisions of trade boards of arbitration, legally enforceable, is discussed elsewhere. In the absence of such legal enforceability organizations of employers and employees may yet bring very strong pressure to bear upon their individual members to carry out agreements and awards of arbitrators, and national organizations can exercise a similar control over their local bodies. The stronger the organization, the more effective its control. Fines may be imposed, and in default of payment the offender may be expelled from the organization. If a trade union has a system of dues and benefits of such a character that by leaving it the member incurs a

considerable financial loss, and especially if the union is so strong th the expelled member may find difficulty in obtaining employment. th threat of expulsion is a highly effective one. Strong employers' as ciations have somewhat similar means of controlling their membe Each party to a system of collective bargaining, moreover, may u the other in enforcing agreements. If, however, the organizatio concerned themselves refuse as bodies to carry out agreements or t abide by the decision of arbitrators, there is under existing laws a remedy. Organizations which have had experience of the adva tageous results of peaceful methods of adjusting labor matters are u apt hastily to break up the system by such violations.

STATE ARBITRATION IN THE UNITED STATES.

While other countries had made earlier attempts by legislation t promote the formation of local and voluntary boards of arbitratio and conciliation, some of the American States were the first to estab lish permanent central bodies with authority to mediate in labor di putes and to arbitrate matters referred to them. New York an Massachusetts established such boards in 1886, and 14 other State have since passed similar statutes. These States are California, Colo rado, Idaho, Illinois, Louisiana, Montana, Minnesota, Ohio, Utah, Wi consin, New Jersey, Michigan, Connecticut, and Indiana.

State boards of arbitration usually consist of three members—one a employer, one an employee (generally appointed on the recommenda tion of labor organizations), and a third who belongs to neither class. In a few States not more than two members of the board may belong to the same political party.

The action of a State board of arbitration may be invoked by either or both parties to a labor dispute, or the board may intervene on its own motion. In case both parties agree to submit their differences to formal arbitration, the laws usually declare that the decision of the board shall be binding, although either party may give notice that after a certain time in the future it will decline to be further bound. As a matter of fact, however, there are in most of the State laws no provisions regarding the procedure to compel obedience, and no penal ties are established. In Illinois and Indiana if the parties have agreed jointly to submit to arbitration the decision may be enforced by the courts under penalty of fine, or in some cases even of imprisonment. As yet there have been in these States no instances in which such methods of enforcing decisions have actually been applied.

Where State boards of arbitration act on the application of a single party or on their own initiative, their functions are confined to the endeavor by informal conciliation to bring about a settlement between the parties themselves, or to formal investigation and publication of their findings. Usually the board has authority to summon witnesses

and to secure evidence, and if no settlement is reached it may publish a statement of the causes of the dispute, assigning the blame as far as possible, and expressing its opinion as to the proper basis of adjustment.

In most of the States having such State boards the law also permits the parties to a dispute to form local boards of arbitration, usually composed of three persons, one selected by the employer, one by the employees, and the other by these two. The decisions of these boards are usually given the same legal standing as those of State boards. In six States—Pennsylvania, Maryland, Iowa, Kansas, Texas, and Missouri—which have no central boards, laws have been enacted authorizing the establishment of either temporary or permanent local and trade boards of arbitration. The Pennsylvania law goes so far as to give either party to a labor dispute the right to compel the other to submit to the arbitration of such a board, and the decisions are also legally binding. The law in Pennsylvania, as in all the other States just named, seems to be a dead letter, while where State boards of arbitration exist it is only very rarely that advantage is taken of the provision for the constitution of temporary local boards.

In several of the States whose laws provide for State boards of arbitration they have never been actually appointed, while several other boards have been almost absolutely inactive. Only in Massachusetts, New York, Ohio, Indiana, Illinois, and Wisconsin can State boards be said to have accomplished results of any special significance. These are, however, States in which manufacturing industry is highly developed and in which labor disputes frequently occur. The inactivity of boards in some of the other States is partly explicable by the relative absence of industrial development and of labor disputes. In other cases it is due to the lack of an adequate sentiment in favor of peaceful methods of settling differences, on the part of employers, employees, and the general public.

It is very difficult to estimate correctly the amount, nature, and value of the work of State boards of arbitration. Their reports give little or nothing in the way of statistical records, and the accounts of individual cases do not always make clear precisely the character of the intervention or its influence on the outcome of the disputes. A few generalizations, however, may be drawn, showing wherein lie the advantages and the limitations of this system.

The work of State boards of arbitration consists in practice almost entirely of mediation and conciliation, of informally conferring with the parties to disputes, and influencing them to reach an amicable agreement between themselves. Very rarely are matters submitted to formal arbitration. Moreover, in most cases the intervention of the State board takes place on its own initiative without application of the parties, while in nearly all the remaining instances the application comes from one party only. It follows that the board usually can

take steps toward mediation only after a strike or lockout has actually begun, since it can not ordinarily secure information as to the existence of a difference prior to open cessation of employment. This is obviously a chief point in which the situation of State boards differs from that of trade boards of conciliation and arbitration.

These limitations in the work of State boards are to a considerable degree inherent. They can never fill entirely such a place as is filled by boards established within the trades themselves, which represent the employers and the employees directly, which are familiarly known to them, and which are constantly and immediately at hand. Employers and workingmen alike understand trade boards. They feel that these boards are their own affairs. The members are in most instances personally acquainted with the disputants and are thus more likely to succeed in conciliatory efforts. On the other hand, State boards are far away and not readily accessible. Their very existence is often not known. It is by no means likely, therefore, that employers or employees will appeal to these boards. Even where the board learns of the existence of a strike or lockout and endeavors to mediate, its approach is often looked upon as an uncalled-for intermeddling of outsiders. In trades where trade methods of settling differences exist, there is especially little likelihood of appeal to the State board or of success in mediation by it. If the bitterness between employees and employers becomes so extreme that they are not able to settle their dispute by machinery which they themselves have constituted, they are seldom inclined to appeal to an outside authority.

The work of State boards must, therefore, be confined chiefly to disputes in trades where no systematic methods of collective bargaining and of trade conciliation and arbitration exist. In these trades too often the very spirit which makes conciliation possible is lacking, as well as knowledge of the advantages of peaceful methods of settling disputes. Consequently disputants are not disposed to appeal to the State board before cessation of employment, with its attendant bitterness, has taken place, nor are they always likely to give a very cordial welcome to the board when it mediates on its own initiative. In many cases one side, finding itself in danger of losing in the struggle, turns as a last resort to the State board of arbitration; but under such circumstances the other party is naturally the less disposed to conciliate or arbitrate.

The lack of familiarity with local and trade conditions likewise limits the activity and success of State boards of arbitration in rendering authoritative decisions regarding labor disputes. We have already observed the general unwillingness of employers and employees to submit questions at issue, particularly where they involve the general terms of the labor contract, to the binding decision of any person outside the trade. These limitations apply to the work of State boards

even more strongly than to that of an outside arbitrator whom the parties themselves might agree in selecting. Both sides are likely to have more confidence in such an arbitrator, as to both fairness and ability, than in a State board with whose selection they have had nothing to do.

Notwithstanding all these limitations, those State boards which have shown energy and tact have been able to accomplish results of much importance. In some cases they have persuaded the parties to disputes to submit to formal arbitration, and in general the decisions rendered have been loyally carried out. In a few cases formal investigations and public reports as to strikes and lockouts have been made, and under the influence of a public opinion thus enlightened, settlements have sometimes been effected. In much more numerous instances State boards, by their mediation, have succeeded in persuading the parties to disputes to meet in amicable conference and to reach settlements by mutual agreement. There is undoubtedly a marked advantage in the existence of a body which is prepared itself to take the initiative in bringing together contending employers and employees.

A very considerable proportion of strikes and lockouts result from misunderstandings and from ill feeling engendered in various minor ways rather than from really important points of difference. Once a rupture has occurred, the disputants often become embittered and show little disposition to approach each other in an amicable spirit. Each feels that it is a surrender of dignity or a sign of weakness to make the first movement toward negotiation. Under such circumstances an outside authority, of known standing and fairness, can often exercise much influence in breaking down the barrier. The State board can consult at first with each party separately and learn its real opinions and desires. It can then present calmly to both parties the positions taken, and in no few instances can make it clear to both that their differences are much less serious than they had supposed. In many cases the board can persuade the parties to meet personally in conference, usually in the presence of the board. After a little parleying it may readily happen that a friendly and businesslike discussion of the questions at issue will be made possible. If this condition is reached through the conciliatory efforts of the State board, a satisfactory settlement of the difficulty is very apt to result.

PROPOSED LEGISLATION REGARDING COLLECTIVE BARGAINING, CONCILIATION, AND ARBITRATION.

The Commission has considered various proposals for extending and making more effective, by means of legislation, the practices of collective bargaining, conciliation, and arbitration. These proposals may be grouped under the following heads:

1. Establishment of State boards of arbitration and increase of their powers.

It is obvious that a mere legal authorization of such methods has no significance. Not only in the United States but in other countries laws authorizing the voluntary formation of boards of conciliation and arbitration have proved dead letters. Employers and employees can form such boards without legislation, and no new prerogatives or advantages can be conferred upon them without going beyond purely voluntary action. On the other hand, where State boards of arbitration and conciliation exist, they can doubtless exercise some influence, if they attempt to do so with energy and tact, in persuading employers and employees to establish collective bargaining, conciliation, and arbitration in a more or less systematic and permanent form.

It would certainly be practicable and desirable for State boards, or, in their absence, State bureaus of labor, to obtain and publish as complete information as practicable concerning the working of existing systems of this sort. In this way employers and workingmen could learn from the experience of others the advantages of these methods. The States might require those who participate in these practices to report from time to time to the State authorities. A national board of arbitration could similarly promote the extension of peaceful methods of adjusting labor difficulties by disseminating information as to the operation of the systems in vogue.

LEGAL ENFORCEMENT OF TRADE AGREEMENTS AND OF THE DECISIONS OF ARBITRATORS.

Not a few persons believe that the system of collective bargaining would become much more effective if the terms of trade agreements were made legally binding in the same way as the terms of other contracts. It is also suggested that in case the parties to a labor dispute agree to submit it to arbitration, whether by State boards or those chosen by the parties, the award should be made legally enforceable. Indeed, should the terms of trade agreements be made binding in law, the decisions of arbitrators, so far as they merely interpreted or applied those agreements, would necessarily also have to be enforceable. Under such a system strikes and lockouts might become absolutely impossible during the term of a trade agreement, if the agreement contained as one of its provisions a requirement that differences as to its interpretation should be submitted to arbitration.

It is urged in favor of this proposal that the responsibility of both parties in collective bargaining and arbitration would be greatly increased, and that employers and employees who are now unwilling to resort to these methods because they have no certainty that the agreements and awards will be carried out, would be more inclined to enter into them. Under existing conditions complaints of violations are many, and such violations frequently produce a degree of friction which makes the continuance of these peaceful methods impracticable.

It is probable that, so far as the trades which ordinarily resort to collective bargaining are concerned, such a law as this would largely prevent strikes and lockouts with their attendant evils.

Compulsory enforcement of the decisions of arbitrators as to matters voluntarily submitted to them would not necessarily involve the decision of the general terms of the labor contract by persons outside the trade, since, as has already been seen, it is not customary to refer such general matters to arbitrators outside the trade at all. It is possible, however, that, if the decisions of arbitration boards should be made legally binding, there would be fewer instances in which trade agreements would permit reference, even of matters of interpretation, to outside arbitrators.

Many employers and a large majority of workingmen are opposed to compulsory enforcement of agreements and awards of arbitrators, and this opposition might possibly prevent the establishment of collective bargaining and arbitration rather than further it. Both in the United States and in Great Britain employers and employees have been disinclined to make use of the laws which have authorized the formation of boards with power to render legally enforceable decisions.

Finally it is urged against enforcing agreements that, however desirable it may be that the trade agreements and the awards of arbitrators shall be strictly carried out, it is impracticable to enforce them legally without extreme measures. While a labor contract might be enforced as against the employer, who is usually a man of financial responsibility, it can not be so readily enforced against the workingmen. In many cases they have little or no property, and damages or fines can not be collected, so that the only method of enforcement might ultimately be by imprisonment. While a few individuals might be imprisoned it would be almost impossible, as well as highly undesirable, to imprison great bodies of men in case they should collectively refuse to abide by agreements or awards. Workingmen themselves are bitterly opposed to general compulsory arbitration, and one of the chief grounds of opposition is that no man should be compelled to work against his will. The same objection would apply, in only a somewhat lower degree, to the compulsory enforcement of voluntary trade agreements and of the decisions of voluntarily established boards of arbitration.

Despite these objections it seems probable that measures would be advantageous which should at least permit employers and employees to enter into legally enforceable agreements regarding the conditions of labor. Without going so far as to permit the imprisonment of men for violating such agreements, responsibility might be greatly increased by the incorporation of labor organizations, while at the same time such incorporation would give those organizations a more satisfactory standing before the courts in forcing employers to live up to their agreements. Incorporation is ordinarily opposed by labor leaders on

the ground that the unions would constantly be subject to attack in the courts; that, for example, suits for damages might be brought against unions for alleged injury through boycotts, exclusion of non-union men from employment, picketing, and various other acts.

The proposal has been made, however, to provide some special form of incorporation which should restrict the liability of incorporated unions so that it should exist only as regards contracts relating to the conditions of labor. Should some such legislation be passed, labor organizations would be more thoroughly able than at present to control their individual members, while national organizations would be able to exercise more effective control over local unions.

In Great Britain labor organizations are given, by special statute, a peculiar position before the law. They have the privilege of holding and transferring real and personal estate by means of trustees, and of bringing suit or defending suits regarding such property. They may hold their officers responsible before the law for the safe-keeping and proper administration of their funds and finances. The British law specifically exempts labor organizations from legal liability for their agreements with employers. A recent decision of the House of Lords, however, holds that union funds may be mulcted in damages for injury to employers by picketing and similar acts—a decision which has caused much dismay among British unionists. In New Zealand practically the same provisions regarding labor organizations have been enacted; but the compulsory arbitration law renders labor organizations, if duly registered, legally liable for their contracts with employers. They have also the right to sue employers for violation of agreement. Only registered labor organizations may take advantage of the compulsory arbitration law. In case trade unions in the United States were given all the privileges which they possess in both Great Britain and New Zealand, it would seem possible to enforce obligations upon them, with no little success, by the threat of depriving them of such legal privileges.

The New Zealand law also provides for the fining of labor organizations as such to an amount not exceeding £500, while the individual members may be held liable to the amount of £10 in case the organization fails to pay a fine. Members may not withdraw without at least 3 months' notice. Many unions in the United States as well as in Great Britain possess large funds of various kinds, and while the workingmen would seriously object to rendering these funds liable to seizure on suits of a miscellaneous character, they would perhaps be willing to have them subject to levy in case of violation of agreements with employers or of the awards of arbitrators, in compensation for similar rights as against employers. In the absence of such permanent funds assessments might be levied upon the members to pay fines or damages imposed by the courts.

Even without provision for imprisoning those violating agreements or refusing to pay such assessments, a strong union would possess great control over its members in compelling them to carry out agreements or in preventing them from escaping, by leaving the union, the effect of court decisions enforcing agreements.

COMPULSORY CONCILIATION AND ARBITRATION WITHOUT LEGAL ENFORCEABILITY OF DECISIONS.

Another proposal which has been strongly advocated would make strikes and lockouts unlawful until after the failure of efforts to secure peaceful settlement. It would compel resort first to conciliation and, if necessary, to arbitration, though without giving legal enforceability to the decisions of arbitrators.

Obviously a mere legislative command that employers must receive the representatives of their men or that employees must seek such a personal interview for the discussion of differences, would accomplish little in furthering really conciliatory negotiation and would be very difficult to enforce.

A more feasible plan would be to require the parties in the first instance to refer their differences to a body consisting of an equal number of representatives of each side, who should be connected with the trade but not directly concerned in the particular dispute. Such a board might be chosen for the individual dispute or might better, if possible, be a permanent body. A requirement of this sort would doubtless in many cases result in the establishment of permanent trade boards of conciliation and arbitration, and even of more or less formal systems of collective bargaining as to the general terms of the labor contract. The mediation of such trade boards, whether they be temporary or permanent, would, in a majority of minor disputes, lead the parties into amicable conference and settlement of their differences. If this result should not follow, the members of the board, if they agreed regarding the points at issue, could render a formal decision, which, though not legally enforceable, could be made public, and which in most instances would be accepted under the influence of public opinion or of organizations of employers and employees. The law might go further and require that, in case of failure of the trade representatives on such boards of arbitration to reach an agreement, an impartial umpire should be selected with authority to render a formal decision, if it proved necessary, and to make the decision public. Where a State board of arbitration exists the option would be given to disputants to refer matters directly to that board. Since in most labor disputes the public has an important interest, it should be permissible for a member or representative of the State board to be present and have a voice, without vote, in negotiations for the settlement of disputes as well as in the hearings before arbitrators.

Should the attempt be made to compel reference of disputed matters to arbitration, boards and umpires established directly by employers and employees for this purpose would have to be given legal power, in case of necessity, to compel the parties to the dispute to submit evidence as to the causes and the merits of the controversy, in order that an opinion of value might be reached. Ordinarily when such boards were once established their work would be chiefly in the nature of conciliation, and they could frequently lead the parties to confer together and to reach a voluntary agreement. In some cases, however, a formal decision would have to be rendered, and this would necessarily have to be based on adequate information. It would be practicable to provide for a registration of such voluntary boards, either by some State authority or by the courts, which should confer upon them power to require sworn testimony and the presentation of books and papers. As above indicated, State boards of arbitration in some cases have such compulsory power, and there is little doubt that employers and employees would often be quite as willing that it should be given to boards established by their own initiative.

The argument in favor of compelling efforts to settle disputes by peaceful methods rests upon the assumption that the general public is seriously affected by strikes and lockouts and has the right to insist upon the exhaustion of every legitimate means of effecting a peaceful settlement before they shall be permitted. It is believed also that such requirements would be very advantageous to employers and employees, that in a great majority of cases amicable adjustment of differences would be brought about, and that thereby the great losses of strikes and lockouts would be largely reduced.

Against this proposed plan it may be objected that the success of conciliation and arbitration depends primarily upon their being voluntary, and upon the existence of a conciliatory spirit on each side—a thing which the law can never create. Many workingmen would doubtless be especially opposed to such a measure, because prompt action in striking is often a condition of success, while, should the cessation of employment be delayed to await the action of conciliators, the favorable moment might disappear, and the employer might strengthen himself for the future struggle. Again, there would be difficulty in applying such measures to cases where union and nonunion men are employed in the same establishment; there might be a division between them as to the selection of arbitrators or as to other courses of action. Such a semicompulsory system of arbitration, too, would be hard to apply to several establishments or localities at the same time, since employers or employees in one establishment or locality might desire a different method of procedure from those in another. Finally, the system encounters, though to a less extent, the same difficulty in enforcement as compulsory arbitration itself.

Serious as are these difficulties, there is reason to believe that they might be ultimately overcome, while the advantages which would follow from an increased employment of conciliatory methods of settling labor disputes would justify the attempt to require by law the resort to such methods. Even though it might be considered unwise to enact legislation of the kind indicated, to apply to all classes of labor disputes, such measures might well be applied to disputes in connection with quasi-public services, such as transportation, and to those of unusual magnitude and of unusual influence upon the public welfare.

COMPULSORY ARBITRATION.

By compulsory arbitration proper is understood legislation which, under legal penalties, compels the parties to labor disputes to submit them to disinterested arbitrators, in case settlement can not be reached within the trade, and to abide by the decisions of such arbitrators. The only countries in which this system has been established are the British colonies of New Zealand, South Australia, and Western Australia. The New Zealand compulsory arbitration law dates from 1894. It applies only to trades in which labor organizations exist. Such an organization may compel employers to arbitrate, and employers possess a similar power toward labor organizations. Several district boards of conciliation are established which have authority thoroughly to investigate disputes brought before them, to conciliate or to render formal decisions, these decisions having, however, no legally binding force. There is also a single court of arbitration for the entire colony, to which appeal may be taken from the boards of conciliation. This court may render decisions which may be enforced by fines upon organizations or individuals.

Opinions differ as to the effect of the New Zealand statute, but it seems that up to the present time, under conditions of general prosperity and advancing prices, it has worked with reasonable success. Many decisions affecting the general conditions of labor of large bodies of men have been rendered by the court of arbitration, and they have usually been carried out by the parties with little opposition. It is probable, however, that the conditions in New Zealand, a small country of only 800,000 people, primarily engaged in agricultural pursuits, are so different from those in a great industrial country like the United States that her experience furnishes little instruction as to the applicability of compulsory arbitration here.

The sentiment of both employers and employees in the United States is almost universally opposed to compulsory arbitration as a general method of settling labor disputes. They deprecate it on the ground that it would involve the ultimate reference of even the most important matters, the general terms of the labor contract, to persons or authorities entirely outside the trade concerned, and that it would be difficult

to enforce the decisions of arbitrators without most rigorous measures. Both of these difficulties have already been discussed under other heads.

Nevertheless, there are many persons who believe that compulsory arbitration is desirable as a last resort in the case of those few great disputes which affect with especial severity the general public interests. The great railway strikes of 1877 and 1894, for example, interfered with the safe and prompt transportation of millions of tons of freight, involving enormous losses to shippers and even threatening starvation to the inhabitants of several cities; they interfered, too, most seriously with the transportation of the mails and with the movement of passengers. The great street railway strikes, which have occurred in several of our leading cities in recent years, have almost paralyzed the business of the people of those cities. In connection with many of these more serious strikes, moreover, riots and violence have occurred, lives and property have been destroyed, while great expense for the purpose of suppressing disorder has been rendered necessary.

In view of these circumstances many hold that it may be wise entirely to prohibit strikes and lockouts in certain special industries, particularly those having to do with the transportation of persons and commodities, and to compel employers and employees in these industries to adjust their differences by collective bargaining and trade arbitration, with ultimate appeal to the binding decision of some impartial tribunal. It is also maintained that where, in other trades, a strike has become so prolonged and bitter as to threaten lives and property, the Government should intervene and compel arbitration. Those who take this position hold that if employers and employees knew that their differences might ultimately be carried to some outside authority, they would be the more disposed to establish methods of collective bargaining and of arbitration and conciliation within the trade itself, and would be the more disposed to reach peaceful settlements by such trade methods rather than to push their differences to extremes. Should compulsory arbitration in either of the two classes of cases above named be deemed desirable, it would evidently be best first to exhaust every resource for the settlement of the dispute within the trade concerned.

If the principle of limited compulsory arbitration be approved, it would apparently be wise for the United States Government to enact legislation on this subject to apply to interstate carriers. A national board of arbitration, such as has already been suggested, could be constituted the authority of ultimate appeal in the case of disputes between employers and employees engaged in interstate transportation.

STATISTICS OF STRIKES AND LOCKOUTS.

The most conspicuous feature of the relations of employers and employees which comes before the attention of the general public is the strike or the lockout. The statistics of strikes and lockouts presented below show the magnitude of the interests affected by such disputes. At the same time the number of persons affected and the amount of time lost through them is not so great as often supposed. It must furthermore be remembered that only a comparatively small proportion of differences between employers and employees result in actual cessation of employment. Most differences are settled, as already observed, by formal or informal collective bargaining, conciliation, and arbitration. Even where little cordiality exists between employers and employees, demands are often conceded under the influence of the threat of strike or lockout. No statistics are available in this country to show what proportion of changes in wages and conditions of labor follow the actual cessation of employment. Such statistics presented by the British labor department show that during recent years more than 95 per cent of all changes in wages in Great Britain have taken place as the result of negotiations between employers and employees or as the result of arbitration, and without strike or lockout.

The distinction between strikes and lockouts is of doubtful validity. It certainly is exceedingly difficult to apply accurately in many cases. Ordinarily a strike is defined as a quitting of employment by the workingmen, who refuse to work unless some demand is granted; while a lockout is said to result from the refusal of the employer to allow his men to work except under conditions which he may dictate. Whether the dispute be called a strike or a lockout, however, each party fixes certain terms and is willing that the employment shall continue if the other party will agree thereto. So long as the dispute continues, each party refuses to accept the position of the other. No logical distinction, therefore, can be drawn on the basis of the refusal of one side or the other side to permit the continuance of work. The really significant distinction as regards all labor disputes, whether formally classed as strikes or as lockouts, has to do with the origin of the proposed change in conditions which causes the dispute.

As a matter of fact, disputes which are classified as strikes, both in ordinary public speech and by official statistics, not infrequently arise from the resistance of workingmen to new conditions proposed by employers, while lockouts also occur at times in resistance to a movement first begun by employees. The statistics show, for example, many strikes which are due to proposed reductions in wages. Clearly the initiative in a case of this kind is with the employer. It

is true, naturally enough, that a larger proportion of demands for changed conditions of employment come from workingmen than from employers, but the workingmen take the initiative in a smaller proportion of strikes and lockouts than appears on the surface from the official statistics.

NUMBER OF DISPUTES AND PERSONS AFFECTED.[1]

Through the courtesy of the Department of Labor the Industrial Commission has been granted the use of advance sheets of the forthcoming report of the Department, which appears approximately contemporaneously with the present report, and which covers the statistics of labor disputes from 1881 to 1900, inclusive. During this period 22,793 strikes were reported, and 1,005 lockouts. The strikes affected 117,509 establishments, and 6,105,694 persons were thrown out of employment by them. The lockouts affected 9,933 establishments and threw out of employment 504,307 persons. The total number of persons thrown out of employment by both classes of disputes was thus 6,610,001, or an average of a little over 330,000 yearly. It is to be noted that these statistics do not include disputes causing cessation of employment for less than a single day, which are very numerous.

The significance of these figures can be understood only by comparing the number of persons thrown out of employment with the total number of persons employed. A fair comparison, moreover, requires the elimination of those classes who can not at all, or can only rarely, be affected by labor disputes, such as the entire agricultural population, domestic servants, employers, and various others. It will be found that there were in 1890, the middle year of the period covered by the statistics, 9,843,466 persons employed in industries where strikes are more or less likely to occur. In fact, a very considerable number of these persons are either in establishments employing only one or two persons, or for other reasons would rarely, if ever, have occasion to be thrown out of employment by a labor dispute. Taking the above number as a basis, the number of persons thrown out of employment by strikes and lockouts at some time during each year from 1881 to 1900 has averaged 33.6 per thousand persons employed. This calculation takes no account of the fact that the same persons are often thrown out of employment more than once during a single year.

TIME LOST BY DISPUTES.

The report of the Department of Labor shows the average length of time elapsing from the beginning of strikes and lockouts to the time

[1] For fuller presentation of strike statistics, see Reports Industrial Commission, Vol. XVII.

when all employees affected are either reemployed or replaced. This may be considered as the average duration of the disputes, although the average amount of time lost by each person affected would be somewhat less, since in the case of many disputes some persons reenter employment before the rest. The average duration of strikes from 1881 to 1900 was 23.8 days, and the average duration of lockouts 97.1 days, the latter number being greatly increased by the prolonged Chicago building trades lockouts of 1900. If it should be assumed that all persons affected by strikes and lockouts remain out of employment for their entire duration, the amount of time lost each year would be equal to the labor, during 300 days of the year, of 24,219 persons. Estimating the population actually subject to strikes and lockouts in the same manner as before, one day out of every 406 days of possible working time was lost as the result of strikes, or one out of 380 as the result of both strikes and lockouts combined.

STRIKES IN FOREIGN COUNTRIES.

A comparison of the statistics of strikes and lockouts in the United States with those presented by various foreign countries seems to show that such disputes are more prevalent in this country than elsewhere. Such a comparison is necessarily imperfect because of the different bases of the statistics, both of labor disputes and of the number of what may be called the industrial population. The proportion of the population engaged in pursuits subject to labor disputes differs greatly in the various countries. It is especially high in Great Britain. While in this country 33.6 persons are thrown out of employment yearly for every thousand of the working population engaged in industries subject to strike, the corresponding proportion in Great Britain is 27.6 per thousand; in France, 18.3; in Austria, 15; in Italy, 13.8, and in Germany, 11.1. Great Britain is the country in which the position of the working classes is most similar to their position in the United States. In these English-speaking countries labor organizations are much stronger, and the conditions of the workingmen have improved more rapidly, than on the continent of Europe. That labor disputes are less prevalent in Great Britain than in the United States is perhaps due to the higher development of systems of collective bargaining and arbitration in that country.

CAUSES OF STRIKES AND LOCKOUTS.

The fundamental causes of labor disputes lie deep in the present organization of society. The desire of workingmen to better their condition, and the desire of employers to secure labor as cheaply as possible, will always be prominent economic motives. So long as the classes of employers and employees exist, there will be strikes and

lockouts, although their number may be greatly diminished by peaceful methods for determining the conditions of the labor contract.

Ordinarily, when the causes of strikes and lockouts are mentioned the demands of employers and employees which lead to such disputes are referred to. These demands are of the most varied character. The nature and relative importance of them can best be judged by the statistics collected by the Department of Labor. On account of the much greater number of strikes than of lockouts, only the demands of strikers need be considered. The statistics regarding the causes of strikes are based on the number of establishments affected by strikes for each cause. During the years 1881 to 1900 there were 1,403 distinct causes of strikes in the 117,509 establishments where strikes occurred. Many of the causes distinguished, however, are made up of two or more separate demands. Thus a strike may be due to the joint demand for an increase of pay and reduction of hours, or to the joint demand for recognition of the union and discharge of nonunion men. The number of entirely separate classes of demands is, however, quite large, probably not less than 100. A large number of these are unimportant and appear in very few strikes; others may be classified in certain large groups. For the purpose of accurate comparison as to the relative importance of different groups of demands of strikers, it is necessary to consider each demand separately in the classification, even though it may appear in connection with other demands as the cause of a single strike. The aggregate number of demands thus considerably exceeds the number of establishments affected by strikes.

Such an analysis of the causes of strikes shows that, from 1881 to 1900, 41.3 per cent of the entire number of demands of strikers in the United States were those for higher wages in one form or another. Under the head of demands for higher wages have been grouped those for the adoption of new scales and of union scales. Much less numerous are the strikes directed against decrease of wages, which cause appeared as 6.9 per cent of the number of demands. The fact that about six times as many strikes involve a demand for higher wages as involve resistance to reduction of wages is probably explicable in part by the fact that workingmen recognize that, if employers feel forced to attempt a reduction of wages, conditions of business must be so depressed that the probability of successful opposition to the reduction would be slight. It is also an evidence of the fact that employers are less disposed or feel less able to reduce wages than workingmen are disposed and feel able to secure advances.

Demands on the part of strikers for a shorter working day, together with the less frequent demands for more satisfactory adjustment of working time, for Saturday half holidays, overtime pay, and other changes connected with the hours of labor, were 25.8 per cent of the

causes of strikes from 1881 to 1900. The great stress which workingmen lay upon the reduction of the hours of labor is evinced by this high percentage.

Many strikes arise from demands regarding the methods of calculating wages or of paying them. Demands of this sort are of great variety. They relate especially to such matters as time and piece work, fines and deductions from wages, screening and weighing of coal or other methods of estimating output, time of paying wages, cash payment of wages as against truck payment, etc. The demands of strikers which may be grouped under this general head appeared as 5.3 per cent of the objects sought by strikers from 1881 to 1900.

The four classes of demands so far enumerated all relate very directly to the improvement of the condition of the workingmen, although some few coming under each head may be of a minor or even of a quibbling character. The four groups together constitute no less than four-fifths of the entire number of demands of strikers. Many of the remaining demands also seek directly better conditions, while in other cases the strikers doubtless usually conceive that an ultimate benefit to themselves may be gained from the successful enforcement of the demands made.

Thus a demand which very frequently appears is that for the recognition of labor organizations. This demand is often accompanied, or is likely, if granted, to be followed by a demand for improved conditions. If we class together the strikes in which the demand for recognition appears and those for the adoption of union rules (as distinguished from union scales of wages merely, grouped under the head of wages), we shall find these demands equal to 6.4 per cent of the entire number of demands in all strikes. Strikes which seek the discharge or exclusion of nonunion men from employment are less numerous than is probably often supposed. If with strikes having this object there be combined the smaller number which seek to exclude members of other labor organizations, unpopular foremen, persons of foreign birth or of particular race or nationality, it will be found that the entire number of demands of this sort is equal to 5.3 per cent of all the objects sought. A little more than 1 per cent of strikes seek the reinstatement or retention of particular employees, especially of union men. Sympathetic strikes are 3 per cent of the entire number.

Attempts of labor organizations to restrict the field of employment and to oppose labor-saving improvements do not frequently appear as causes of strikes. Strikes regarding apprenticeship, for example, are less than 1 per cent of the entire number, while those regarding the introduction or use of machinery or improved appliances are only one-seventh of 1 per cent of all. The numerous other minor demands of strikers include altogether only about 4 per cent of the causes of strikes.

RESULTS OF STRIKES.

A consideration of the broad question of the social and economic effects of strikes and lockouts may be deferred for the present. The statistics of the direct outcome of these disputes are important and interesting, and serve to throw light on the broader question, although they by no means constitute a complete answer to it.

From the report of the Department of Labor regarding strikes from 1881 to 1900, it appears that in 50.77 per cent of the establishments in which strikes occurred, the workingmen were wholly successful in obtaining their object; in 13.4 per cent they were partly successful, while in 36.19 per cent of the establishments strikes were entirely unsuccessful. A comparison of the results according to the number of persons thrown out of employment presents a somewhat different view, and one less favorable to the workingmen. Only 35.02 per cent of all persons affected by strikes were wholly successful in their objects; while 16.72 per cent were partly successful, and 48.26 per cent were wholly unsuccessful. The discrepancy between the figures by establishments and by the persons affected seems to indicate that strikes in smaller establishments are more apt to result to the advantage of the workingmen than those in the larger establishments.

In judging the significance of these figures it is to be noted that partly successful strikes represent an absolute gain for the workingmen. Their condition is made better as the result of the strike than it would otherwise have been (no account being taken of the loss of time and money during the strike). It appears, therefore, that a little more than half of all persons thrown out of employment by strikes found their condition improved as the result. As above indicated, the statistics of the Department of Labor do not include the very numerous strikes lasting less than a single day. A large majority of these result in favor of the workmen. Employers often refuse to grant concessions until actual quitting of work shows that the men are in earnest and propose to push their demands.

The statistics of lockouts show results much less favorable to the workingmen. This might be expected. A lockout is not likely to occur unless the employer feels fairly confident of the strength of his position. While workingmen were wholly successful in rather more than half of all the establishments in which strikes occurred during the past two decades, they succeeded altogether in resisting the position of employers in lockouts in only 42.93 per cent of the establishments, while compromise resulted in only 6.28 per cent, so that the employers won complete victories in more than half of the entire number of establishments affected by lockouts.

An analysis of the results of strikes according to the demands of the workingmen shows that strikers are more likely to be successful

when they demand higher wages or changes regarding the hours of labor than in the case of most of their other demands. Strikes against reduction of wages show, as perhaps might be anticipated, a very much lower proportion of success than those which seek increase. Strikes against employment of nonunion and other obnoxious men, sympathetic strikes, and those regarding apprenticeship and the use of machinery, are much less successful than the average.

EFFECT OF LABOR ORGANIZATIONS ON RESULTS OF STRIKES.

That formal organization of workingmen should in general strengthen them in their contests with employers is natural. The statistics of strikes and lockouts show this effect distinctly. Thus from 1881 to 1900 the workingmen were successful in 52.86 per cent of the establishments in which strikes were ordered by labor unions, while in establishments where strikes were not ordered by such organizations they were successful in only 35.56 per cent of their disputes. A comparison of the results of strikes in different trades also shows that in the trades most strongly organized strikes are most successful. It is, to be sure, difficult to determine with certainty whether a given trade is to be considered as strongly or weakly organized. Among those enumerated by the Department of Labor in its strike statistics, however, the brewing, building, glass, machinery, printing, shipbuilding, stone quarrying and cutting, tobacco, and transportation industries are quite generally recognized as strongly organized. The workingmen in these trades were successful in obtaining their objects in 48.77 per cent of the establishments in which they struck on the order of unions, and failed altogether in 39.15 per cent. On the other hand, in the boot and shoe, brickmaking, carpeting, coal and coke, cotton, paper, rubber, silk, and woolen trades the workingmen are, or have been until recently, largely unorganized. On an average in these trades, strikes were successful in only 28.82 per cent of the establishments in which they were ordered by labor organizations and in only 26.25 per cent of the establishments in which they were not so ordered.

RESULTS OF STRIKES IN FOREIGN COUNTRIES.

The following table, compiled from the official statistics of the leading countries, shows the relative proportion of persons engaged in strikes who were successful, partly successful, and unsuccessful in each country. The figures are not altogether comparable, because of the different periods of time covered. Moreover, there are probably some differences in the methods of estimating results of strikes. Thus, it is noteworthy that all of the foreign countries covered by the table report a very much larger proportion of partly successful strikes than the United States. In the United States only about one-sixth of all strikers are reported as being partly successful, while in

Great Britain and Italy the proportion of partly successful strikers is one-third, and in Germany and Austria more than one-half. Because of the high ratio of partly successful strikers in these foreign countries, the proportion of wholly unsuccessful strikers appears larger in the United States than in any other country, although the proportion of wholly successful strikers is also higher in this country than in any other except Great Britain.

Comparison of results of strikes.

Country.	Years.	Proportion of persons affected who were—		
		Successful.	Partly successful.	Unsuccessful.
		Per cent.	*Per cent.*	*Per cent.*
United States	1881–1900	35.02	16.72	48.26
Great Britain	1889–1898	37.6	33.2	29.2
France	1890–1899	18	43.3	38.6
Germany	1899	18.8	52.2	29
Austria	1894–1899	9.4	57	33.5
Italy (average)	1892–1898	30	33.1	36.7

The figures seem to show that British strikes are on the whole much more advantageous to the workingmen than those in the United States. While 35.02 per cent of strikers in this country were wholly successful, 37.6 per cent of those in Great Britain were entirely successful, and the proportion of partly successful strikers is so much larger in Great Britain that complete failure resulted for only 29.2 per cent of all persons affected by strikes, as compared with 48.26 per cent in the United States.

LOSSES FROM STRIKES AND LOCKOUTS.

The Department of Labor has endeavored to compile figures showing the losses of employers and employees as the result of strikes and lockouts. It is admitted that the figures are far from accurate. For instance, the estimate as to the losses of strikers is based on the reported amount of time lost and the daily rate of wages, and it is impossible to know whether the rate of wages taken as a basis represents a correct average for all the strikers. Losses of employers are still more difficult to estimate correctly. According to these statistics the aggregate loss to employees in wages, as the result of labor disputes from 1881 to 1900, inclusive, was $306,683,223, or a little over $15,000,000 yearly. The loss to employers during the same period is stated at $142,659,104, or rather less than one-half of the amount lost by strikers. The aggregate losses thus amount to nearly $450,000,000, or an average of about $22,500,000 yearly. No attempt has been made by the Department of Labor to ascertain the financial value of the advantages obtained by successful strikers, or the length of time which would have to elapse in order that the losses during strikes would be offset by such gains.

ECONOMIC AND SOCIAL SIGNIFICANCE OF STRIKES.

It is by no means uncommon to hear strikes spoken of as being altogether abnormal interruptions of economic activity, and wholly injurious to society. The criticisms against them may be summarized under the following heads:

1. That they are in their very nature coercive, and that the collective action of workingmen in them involves an attempt at monopoly.

2. That they are chiefly due to the influence of agitators, or of those who expect to profit by the struggle itself, and that in most cases they do not represent the sober desire of the great body of the workers.

3. That strikes are exceedingly expensive to employers, to employees, and to society as a whole, and that the gain to the working class does not equal the loss to that class, much less the loss to the community.

4. Finally, criticisms are directed much more frequently against the methods sometimes employed by strikers than against the cessation of work itself. It is often charged that intimidation and violence are the almost universal accompaniments of these labor disputes.

While many strikes may properly be condemned on one or the other of the above grounds, to condemn strikes altogether is unwarranted.

THE ECONOMIC BASIS OF THE STRIKE.

When the "labor movement" first began to take on sufficient proportions in Great Britain to be dignified with the name, the opinion of the middle and upper classes was very generally hostile to any form of collective action on the part of workingmen. Strikes were considered criminal conspiracies, and acts of Parliament and court decisions frequently condemned them. A few early decisions of the courts in the United States also held strikes in themselves criminal. This attitude of the law has long since been abandoned both in Great Britain and in the United States. In many American States laws have been enacted recognizing the legal right to strike, while in the absence of such statutes the courts take the same position.

Nevertheless, the opinion is not infrequently expressed, by employers and others, as well as by judges in the way of obiter dicta, that, at least in a great majority of cases, strikes are economically and morally indefensible. It is asserted that the action of workingmen in collectively refusing to work is an attempt to monopolize the supply of their particular class of labor, and to coerce employers as regards the management of their own business. No one denies the right of an individual workman to quit, nor even of a body of workmen to do so if they really intend permanently to sever their relations with the employer. It is objected, however, that the quitting is not bona fide;

that the workingmen openly claim a right to the positions which they have abandoned, and seek merely to force the employer, by temporarily withholding their labor, to reemploy them under conditions which they shall dictate. The injurious effects upon industry arising from the cessation of labor are usually set forth with great emphasis by those who take this general position regarding strikes. The criticism at this point merges into another, which condemns strikes, not absolutely and in themselves, but on the ground that they are not the best means of accomplishing the ends sought.

It is probable that very few disinterested persons, and indeed very few employers of labor, would take the extreme position stated in the preceding paragraph. Most people believe that the welfare of society will be promoted by improving the conditions of the working classes and by increasing their income, at least absolutely, and perhaps relatively to that of other classes. While it must be universally recognized that it is desirable that the terms on which labor shall be performed shall be peacefully adjusted whenever possible, there are, especially in view of the attitude taken by some employers toward their men, many instances in which the only way for workingmen to force even a consideration of their demands is by collective quitting of employment. They must use the same ultimate argument as the seller of any other commodity—the refusal to sell at the terms offered by the buyer.

The object of strikers, except in a few extreme cases, is to improve their condition and to secure a more satisfactory bargain. With this object they endeavor to show the employer that he can better afford to comply with their terms than to do without their labor. If no attempt is made to exclude others from entering the service of the employer by violence and threats, the strikers are employing a legitimate method of bargaining; the only one remaining to them if they have failed to reach an agreement with the employer or if the parties have been unwilling to submit to arbitration. That workingmen may sometimes be unjust in their demands, or—what is perhaps still worse—unwise in them, does not render less legitimate the method by which demands, whether just or unjust, wise or unwise, must, in the last instance, be pressed.

INFLUENCE OF LEADERS AND AGITATORS.

The charge is also frequently made by employers and others that many, if not perhaps most, strikes are due, not so much to the general desire of the body of the workingmen to better their conditions, as to the influence of a few extremists. There are many professional agitators, it is claimed, who have altogether exaggerated and erroneous ideas regarding the rights of the working classes and the injustice of existing conditions; or who perchance hope to secure a purely selfish

lvantage, whether notoriety or some pecuniary gain, through »menting labor disputes. So-called "walking delegates" are espe-ally often criticised for their part in promoting strikes.

There is beyond question no little truth in such statements as these. ot only the interests of employers and of general industry, but even ıore, perhaps, the interests of the workingmen themselves, are ıjured through the influence of unduly radical or corrupt leaders. 'he average workingman can scarcely bring to the consideration of is economic actions such broad knowledge and such able deliberation as the average business man. He is apt to be carried away by is feelings, and his feelings are often easily swayed by the arts of he demagogue. Not only may he be persuaded by the professional gitator to exaggerate the evils and wrongs of his own condition, but, vorse still for him, he may be won over to a false confidence in the »ossibility of bettering that condition by striking, and to the employnent of illegitimate or violent methods in the dispute.

Nevertheless, it is easy to overestimate the influence of the few in »ringing about strikes and in determining the methods of strikers. The average American workingman is probably more intelligent, more ıble to decide his economic courses, than the average workingman in ıny other country. Most workers know, from common sense and perhaps from experience, the cost to them of quitting work and the strength of the position of the employer. Usually it is only among the relatively unskilled and unintelligent that mere agitators are able to exercise much influence. Leaders there are among all classes of workingmen as among all classes of society; but usually they owe their leadership to the fact that their followers have come to believe that they represent the real desires and the best interests of the body of the men. Indeed, it is the testimony of many employers, as well as of workingmen, that a large proportion of the leaders of labor organizations, and especially the national officers and the officers of the largest local unions, are more conservative than the great mass of the members of the organizations; that through their influence the number of strikes is reduced rather than increased, and the methods of strikers are made more legitimate than would otherwise be the case. The statistics of strikes show that more than five-eighths of all are ordered by labor unions. It has already been pointed out that the rules of labor organizations almost invariably provide that strikes may be inaugurated only when the vote, by secret ballot, of a majority, and frequently of two-thirds or three-fourths of the members, is in favor of quitting work. It has also been pointed out that the approval of the national officers is ordinarily necessary for the inauguration of strikes by workmen connected with national labor organizations. The idea frequently met with, that strikes can be ordered at the whim of a "walking delegate" or of other officers, is a mistaken one as regards

very nearly all unions. Officers and business agents doubtless often exercise great influence in bringing propositions for strikes before their organizations, and in persuading the members how they should vote—which is equally true of all human organizations; but they have no dictatorial power. It is also a mistake to suppose that a strike can, under ordinary circumstances, bring any direct advantage to union officers. Their pay is seldom if ever increased during disputes. The indirect advantage of general popularity may be gained for the leader who advises the inauguration of a strike which proves successful, but there is always the chance that failure may exercise an opposite influence.

ECONOMIC EFFECTS OF STRIKES.

The most powerful indictment which can be brought against strikes is that which charges them with being economically wasteful and injurious to society. This indictment becomes yet stronger if it can be proved that even the workingmen themselves lose more than they gain by strikes.

That strikes are expensive is undeniable. That they are likely to engender bitter feelings, and at times to result in physical violence and the destruction of property, or even of life, is unfortunately true. While the statistics above presented show that, after all, a comparatively small proportion of the possible working time of the entire laboring class is lost through strikes and lockouts, it is nevertheless true that in some particular trades, and as regards many thousands of individual workingmen, the amount of idle time resulting from them is a much larger proportion of the available working time. While the aggregate losses of employers through labor disputes are relatively small in comparison with the aggregate production of wealth, many individual employers and many localities suffer great losses through the closing of establishments. The losses and inconveniences inflicted upon those not directly concerned in strikes and lockouts are also great, in particular instances far exceeding those incurred by employers and employees.

It is by no means certain, however, that strikes and lockouts cause as great a diminution of working time and of production as appears at first glance from the statistics. In many cases a strike simply changes the date of unemployment without materially increasing its aggregate amount. Very many establishments find it impossible, because of insufficient demand for their products or for other reasons, to operate continuously. The employees by striking may so reduce the product for the time being that during the remainder of the year the establishments will be active, and idleness which might otherwise have occurred for other reasons will be avoided. So far as this is true, it might often happen that, even though the workingmen gain no direct

engtb of the workingmen, and that, though no immediate improvement in conditions may result from a particular strike, yet the general policy of striking as a means of pushing the labor bargain renders employers more ready to make concessions when new demands are made than they would be if the workingmen never showed their ability and willingness to uphold their position by such vigorous methods. The argument here turns on the same point which has already been brought out, that the strike is the only ultimate method of pressing a demand. It is urged that, had the workingmen not acted collectively during the past hundred years, had they not in numberless cases demonstrated the necessity of their labor for the conduct of business by employers, had they tamely accepted the conditions of labor accorded, or contented themselves with mere verbal complaints, the great improvement in the condition of the working classes would never have been made. This is the argument by which the strike as a last resort is defended even by such staunch champions of peaceful methods of adjusting differences regarding the labor contract as Mr. Powderly, formerly general master workman of the Knights of Labor; Mr. Gompers, president of the American Federation of Labor; Mr. Mitchell, president of the United Mine Workers, and Mr. Sargent, grand master of the Brotherhood of Locomotive Firemen. This same position is taken also by many disinterested persons who have given thought and study to labor organizations, and not a few employers also concede that strikes at times are necessary as a method of promoting the welfare of the working classes.

It may therefore be concluded that the general policy of striking, as a last resort, is economically justified, and that the advantages secured through strikes by the working classes are, on the whole, greater than the losses which they suffer, or which are inflicted upon employers and the general community. This by no means implies that every strike is economically or morally justifiable.

METHODS OF STRIKERS IN LABOR DISPUTES.

While the general policy of striking may, therefore, be justified, complaint is made against some of the methods by which strikers at times endeavor to win their cause. Certain of the practices of strikers and labor organizations which are often condemned by employers have, however, much in their defense. The practices which are criticised may be grouped under three main heads: Intimidation and violence, picketing and patrolling, boycotts.

INTIMIDATION AND VIOLENCE.

It is a well-known fact, which is emphasized by the testimony of various witnesses before the Industrial Commission, that too often

labor disputes are accompanied by intimidation and violence. Workingmen on strike often gather in large numbers in the vicinity of the establishment struck against. Such bodies of strikers at times make use of threats and intimidation toward those who are seeking employment in the places left vacant. Even when no direct verbal threats are made, the presence of a large body of men, with gestures and signs of disapproval, may at times seem to the ordinary workingman to imply danger. The use of taunts and jeers, especially of the cry of "scab," is considered by some employers who have testified before the Industrial Commission to be sufficiently opprobrious conduct to deserve legal condemnation, and the more so if they are used not merely in the vicinity of the establishment struck against, but wherever those attacked may go—around their homes or elsewhere. Some witnesses also complain of the hardship inflicted upon men who take the places of strikers, by the practice, among some labor organizations, of pursuing such men into places of future employment, endeavoring to prevent them from getting work and to exclude them permanently from union membership.

Threats and intimidation on the part of strikers sometimes give place to more overt acts. Applicants for work are roughly handled, perhaps openly in the public streets near the working place, perhaps at night and clandestinely. In some extreme and rare instances armed conflicts occur, or even secret assassinations. Resort to violence is especially likely to occur where employers endeavor to import considerable bodies of men from other parts of the country to take the place of the strikers.

The lawless acts of strikers are most commonly directed against those who seek to take their places. Occasionally, however, the property of employers is attacked, or even physical violence toward employers and their agents is attempted. In the great railroad strikes of 1894, of which Chicago was the center, threats and violence toward workingmen were resorted to in a number of cases, while in several places strikers and others destroyed cars, blocked and tore up tracks, disabled engines, and in other ways injured property and physically prevented the movement of trains. Similar attacks on the property of employers have been made by strikers and their sympathizers in some of the great street railway disputes. Perhaps the most serious and long-continued state of lawlessness exhibited by workingmen was that which prevailed in the Cœur d'Alene mining district of Idaho, culminating in the riot of April, 1899, during which the concentrating mill of the Bunker Hill and Sullivan Mining Company was destroyed and two men were killed. At various earlier times the miners in this district had killed or driven out of the country by violence foremen and agents of the mining companies and many nonunion men.

The attitude of the law toward acts of strikers which can fairly be considered violent is one of absolute condemnation. Their extreme acts fall under the definitions of the ordinary criminal statutes. In many States laws have been passed which are especially directed against interference with any person in the conduct of his lawful business or labor, by means of either violence or intimidation. These statutes are, in general, broadly applied and vigorously enforced by the courts. In the absence of statutory provisions the American courts have often held violent or threatening acts of strikers to be criminal, or civilly illegal because of the interference with the rights of the employer and of those seeking employment. In many instances wide-reaching injunctions have been issued against such acts—a practice which is more fully discussed in another connection.

Practically all classes in the community unite in condemning those acts of strikers which involve direct violence or evident and serious intimidation. Whatever may be the merits of any labor dispute, the contestants are morally bound to confine themselves to peaceful methods. If men quit employment, they have no right to prevent others from taking their places. The legal right of an employer to hire whom he will, and the right of a workingman to enter any employment which he can secure, must be maintained, whatever the right or wrong of the issue in any particular dispute.

All prominent labor leaders and officers of labor organizations claim that their own position, as regards violence, is substantially that just stated. It is maintained, also, that the great majority of the more intelligent of the working class is averse to violence and intimidation in all forms; and that only rarely have labor organizations, as such, openly advocated such measures. Resort to violence, such witnesses hold, is usually found only among the more ignorant workingmen, or, in the case of disputes involving more skilled laborers, it is confined to the few, for whose acts the entire body of strikers or of union men are unjustly blamed. Often, moreover, acts of violence are committed by those who are not strikers at all; by the rough element of the population, which is ready to seek any opportunity for lawlessness.

These protestations of workingmen and their leaders must be accepted as representing the general attitude of the more intelligent, and, indeed, of the great body of workingmen, toward physical violence and intimidation; though in some instances prolonged disputes develop such strong feelings that even those usually more conservative yield to the temptation to use extreme measures. After all, violence is a less common accompaniment of labor disputes than is often supposed. It is very generally recognized that resort to it will be confronted by the strong hand of the law, and that, in any case, it is the very

worst policy for striking workingmen, because they thereby forfeit public sympathy, and embitter the employer against whom the strike is directed, so as to make him the more determined to resist to the end.

PICKETING.

It is a common practice of men on strike to place "pickets" in the vicinity of the establishment struck against. Picketing may take on such a form as to amount to intimidation, or may lend itself to physical violence; but these are by no means necessary accompaniments. In many, if not most instances, the pickets are a comparatively small number of men, formally designated for the purpose of accosting those who seek to enter the establishment to obtain work, informing them of the existence of a strike and of the points at issue, and endeavoring to persuade them to keep away.

In Great Britain the Conspiracy and Protection of Property Act, passed in 1875, specifically legalized strikes, and likewise legalized the practice of picketing, if conducted in a peaceful manner. The definition of unlawful intimidation is, however, quite wide, and that of legitimate picketing narrow. The latter is restricted to "attending at or near the house where a person resides or works * * * in order merely to obtain or communicate information." The provision on intimidation is as follows:

> Every person, who, with a view to compel any other person to abstain from doing or to do any act which such other person has a legal right to do or abstain from doing, wrongfully and without legal authority (1) uses violence to or intimidates such other person, or his wife, or children, or injures his property; or (2) persistently follows such other person about from place to place; or (3) hides any tools, clothes, or other property owned or used by such other person, or deprives him of or hinders him in the use thereof; or (4) watches or besets the house or other place where such other person resides, or works, or carries on business, or happens to be, or the approach to such a house or place; or (5) follows such other person with two or more persons in a disorderly manner in or through any street or road, shall, on conviction thereof, by a court of summary jurisdiction, or on indictment as hereinafter mentioned, be liable either to pay a penalty not exceeding £20, or to be imprisoned for a term not exceeding 3 months, with or without hard labor.

The British courts have so interpreted these provisions regarding intimidation and picketing as to cause a strong movement of the workingmen for a more liberal statute. For example, it is quite generally held by the courts that the number of pickets shall not be more than two.

No similar detailed statute regarding intimidation and picketing has been passed in the United States. Practically no specific definitions of intimidation are given in the American laws already referred to, except that the use of threats of violence is usually mentioned. The decisions of the courts regarding the application of these laws to

picketing, as well as their decisions on the same subject under the common law, are conflicting and confusing; but in a very considerable proportion of cases picketing has either been held unlawful in itself, or circumstances and acts in connection with the practice have been held unlawful. It is almost uniformly held that the continued presence of a large body of strikers in the vicinity of a plant involves an unlawful threat. The use of violent language and direct threats, whether the number of pickets be small or large, is also usually condemned by the courts. Several decisions, however, have held that if the number of pickets is reasonable, and if they act peacefully, confining themselves to giving information and to persuasion, the practice is lawful. On the other hand, in two or three cases, courts of ultimate resort have practically held unlawful mere picketing by a small number of persons and without threats or demonstrations of force, either on the ground that some degree of intimidation is involved in any case, or that the practice constitutes an interference with the right of the employer to hire men and the right of the workingman to seek employment. Several injunctions have very recently been issued, absolutely prohibiting the practice of picketing.

There can be no question of the unlawfulness and injustice of direct interference, by force or intimidation, with the legal right of an employer to hire whomever he will, and of any man to seek employment wherever he pleases. On the other hand, it is difficult to see how abridgment can properly be placed upon the right of a citizen to give information to another on any subject, or to persuade him to do or not to do any act the doing or refraining from which is not in itself unlawful. The question whether justice, as regards the general point at issue in a strike, rests with the employer or the strikers seems to be of no moment in determining the legality of such acts of the strikers.

Workingmen not only insist on the legal right to place pickets, but maintain that the practice is economically and morally justifiable. The strength of the working classes in their negotiations with employers depends largely upon cooperation. It is for this reason that labor organization is so necessary. Only if, from feelings of sympathy for one another, and from a recognition of the dependence of the progress of all upon the support of each, workingmen refrain from "cutthroat" competition, and thus aid one another in their contests with employers, will there be much chance of success in any particular dispute or of general advance. To this end it is above all necessary that during a strike applicants for work shall be informed that the vacancies have been created by a strike. It is by no means uncommon for employers to advertise for men without indicating that a dispute is in progress. It seems also clearly legitimate for strikers to explain to those seeking employment the precise point at issue, in order that they may form

their own opinion as to its justice. Finally, there is no sufficient reason for condemning peaceful persuasion and argument designed to deter men from taking the places of the strikers.

It is especially argued by some workingmen, in behalf of the necessity of picketing, that in many cases employers try to fill the places of strikers with a much lower grade of men, often imported from other localities. Men of foreign birth or negroes are frequently employed, confessedly as "strike breakers." Even where this is not done, men from other trades, or those who have hitherto been helpers or inferior workmen, are employed in place of the strikers. If, where employers resort to this policy for defeating a strike, the strikers can in any way persuade those who seek to take their places that they are inflicting a serious injustice, and perhaps doing little to benefit themselves, the interests of the entire working class, and indeed of society as a whole, will be promoted.

That strong feelings are likely to be aroused during strikes, and that pickets may readily be tempted to turn persuasion into threats and even threats into blows, is claimed to constitute no sufficient ground for condemning the practice of picketing altogether. If picketing is to be recognized as a rightful and lawful means on the part of workingmen for promoting their interests, it is desirable that statutes should be enacted in the several States defining, as accurately as it is possible to do, unlawful intimidation as distinguished from lawful picketing. The distinction can not be made absolute. It can, however, be so indicated in the terms of the law that judges will be required to exercise less wide discretion in interpreting what kinds of acts fall under the prohibitions than they are now forced to exercise. The question as to the use of the injunction regarding such acts is discussed below. If the law makes it clear that peaceful persuasion is permissible, but that actual intimidation is unlawful, the question whether particular acts of strikers are to be considered persuasion or intimidation will be one properly falling to the decision of juries. Such specifically worded statutes would doubtless do much to increase the respect of strikers for the law and to influence them to confine themselves to peaceful methods. If, because of looseness in legislation, they feel that they may be punished for peaceful acts which seem to them justifiable, they are tempted to resort to actual intimidation and violence, on the ground that probably they will be punished whatever they do, and that no severer penalties will be imposed for these violent measures than for peaceable ones. The feeling, whether well or ill founded, that, under existing laws, legitimate acts are often punished, doubtless develops a spirit of opposition to the law which carries acts of strikers further than they would otherwise go.

BOYCOTTS.

It is doubtful whether the practice of boycotting is as prevalent among workingmen at present as formerly. Nevertheless, mild forms of boycotts are instituted against many employers, while from time to time workingmen carry on more vigorous and effective campaigns against unpopular employers. Local labor papers very generally contain lists of unfair employers in the city, while the journals of national organizations contain similar lists of employers, not only within the particular trade represented by the journal, but often in other industries also. The American Federation of Labor has "an unfair list," although it is much less ready than formerly to place names upon it; perhaps not so much because of public opposition to the practice as because such lists, when they become too long, have little influence on the purchases of workingmen.

Loyal members of labor organizations are supposed to refrain from patronizing establishments listed as "unfair." To what extent they actually carry out this principle can not be determined. It is probable that within a given city, or within a given trade, employers who are listed by the local central labor unions or by the national trade union find the purchases of their goods by union men materially restricted. In few instances, however, have employers attempted to prosecute workingmen for such more or less passive boycotts.

Much more strenuous are the objections of employers when workingmen try actively to influence not only other workingmen, but the entire community, to withhold patronage from the employer who refuses to comply with demands made by his men. The strongest objection of all is directed against what is sometimes called the "compound" boycott, in which workingmen threaten refusal of patronage or other financial injury to those who patronize the employer against whom the primary boycott is directed. The most conspicuous boycotts of this class have been those against certain newspapers. The workingmen have at times not merely tried to persuade the public to refrain from subscribing for or advertising in the boycotted journals, but have boycotted those who advertised in them.

Statutes have been passed in several States with the direct object of prohibiting boycotts, although the word itself is not used except by two or three States, such as Illinois and Colorado. The offense is usually defined in some such language as "conspiring with fraudulent and malicious intent to injure the personal character, business, or property of another, or to do any illegal act injurious to the public trade." The definitions are not very explicit, and much depends on the interpretations of the courts. The courts have usually applied such statutes broadly, and in the absence of statutes the boycott has been very generally condemned under the common law as an illegal interfer-

prohibited interference with the business of a large number of the most important railroads of the country, or with trains engaged in interstate commerce or carrying the mails. It prohibited all persons from compelling or inducing by threats, persuasion, or intimidation, any of the employees of the railroads to refuse to perform their duties or to quit employment, and prohibited, almost as broadly, efforts to prevent persons from entering employment. Numerous specific acts of violence and interference with property were also named. Finally, the order prohibited the doing of any act in furtherance of a conspiracy to prevent the operation of the railroads, or the directing or assisting of any person to commit any of the acts named. Many other injunctions have gone quite as far. Often they have specifically prohibited boycotts, picketing, and in one or two cases even the paying of strike benefits by labor unions. Some of the injunctions issued by lower courts have been modified by higher courts and made less far reaching. In general, however, the courts have upheld injunctions against almost any act of workingmen which would constitute a ground for action for civil damages, or almost any act which might be the subject of criminal prosecution.

OBJECTIONS TO USE OF PROCESS.

Against such extended use of this legal process in connection with labor disputes, vigorous and almost universal protests have been raised by workingmen. Many persons not directly interested in labor questions, including not a few prominent lawyers, even though reprehending the acts against which injunctions are directed, have also maintained that this is an improper method of seeking to prevent them.

The first objection raised is that temporary injunctions may be issued without any hearing whatever of the persons against whom they are directed. Injunctions are very often issued by judges in chambers and on the shortest possible notice. Even though such an injunction may not be made permanent, the time elapsing before the hearing as to its continuance is often so long, it is maintained, that the temporary injunction exercises a powerful influence in interfering with the acts of labor organizations and strikers.

A second objection against injunctions arises from the fact that courts of equity may enforce such decrees by means much more immediately effective than would be possible in ordinary civil or criminal suits. Injunctions are often directed against acts which may become subjects of civil suits for damages. Aside from an injunction the only possible remedy under a civil suit would be pecuniary, and the amount of damages, at least in many cases, would have to be determined by a jury. The person who does precisely the same acts in violation of an injunction may be punished by the court for contempt, by any penalty which

the court may see fit, whether fine or imprisonment. In criminal proceedings the maximum penalty is fixed by law, while courts are not limited as to the penalty for contempt.

INJUNCTIONS AGAINST CRIMINAL ACTS.

The most severe criticism brought against the modern use of the injunction in labor disputes is that by this means citizens are deprived of their constitutional right of trial by jury as regards criminal acts. A large majority of injunctions in labor disputes have prohibited acts which, according to common or statute law, are criminal. In the absence of the injunction, the person charged with such acts might have been prosecuted; but in that case, he would have had the right to a trial by a jury of his peers, while contempt of court is tried and punished by the court alone.

Those who take the position that the injunction may not properly issue against criminal acts, declare that it can add no new sanction to the force of the criminal law. The acts forbidden would subject the offender, after proper proof, to fine or imprisonment. These are the only penalties which the court may inflict for contempt. It is claimed, therefore, that the restraining order can properly have no additional influence in deterring from crime, and that there is no inadequacy in the law without the injunction. The only possible effect, therefore, of the issue of the injunction, is to transfer the trial of the person charged with such criminal acts from a jury to a judge alone, and to deprive the defendant of the right to an appeal. Workingmen, especially, often maintain that judges, being usually selected from the well-to-do classes, are likely to be less favorably disposed toward the acts of organized workingmen and of strikers than an ordinary jury would be. Many acts which workingmen consider perfectly legitimate, such as peaceful picketing, have thus been enjoined and punished as contempt of court.

Various writers on law hold that, up to most recent times, it has been a generally recognized principle that equity courts have no jurisdiction regarding crimes, and that injunctions may not be issued against them. The opposite position has, however, been taken by the highest courts in this country, both State and National, including the Supreme Court of the United States in the Debs case. It is usually admitted by these courts that something more than a mere threatened offense against the laws of the land is necessary to justify the employment of the injunctive power. The purpose of the injunction, it is held, has always been to prevent a threatened and irreparable injury to property or to rights of a pecuniary nature. The same act, it is urged, may be unlawful both civilly and criminally. It may be a crime and at the same time may result in an irreparable injury to property. Under such circumstances, the court decisions hold, the

mere fact that the act is criminal does not exclude the use of the injunction to prevent the injury to property and pecuniary rights. The use of injunction in connection with labor disputes is especially defended on the ground that the workingmen are usually not financially responsible, and that if pecuniary injury resulted from their acts no damages could be collected from them.

Some writers, while admitting the validity of the above argument, hold that it properly applies only to cases where a specific property right of a particular individual is clearly threatened, and that it is obvious, from the language of the courts in connection with many recent injunctions, that they have been issued primarily with a view to protect the general public. Thus in upholding various railroad injunctions the courts have specifically referred to the great injury to the general public welfare resulting from the cessation of the operation of a railway. The protection of the persons of those seeking employment has also been a professed object in some injunctions.

A still further reply to the criticism of the modern use of injunctions is made on the ground that modern conditions call for new remedies, particularly as regards labor disputes connected with interstate carriers; and that the anti-trust act of 1890 grants specific authority for injunctions against combinations in restraint of interstate commerce. The courts have held in various decisions that it was the evident intention of Congress, in view of the irreparable nature of the injury which often results from interference, by bodies of workingmen, with the mails and with interstate commerce, by that act to place in the hands of the courts the extraordinary instrument of the injunction to prevent such interference. Others, however, urge that the anti-trust act was clearly intended to apply only to combinations of capital.

INJUNCTIONS OF THE FEDERAL COURTS.

The complaints of workingmen regarding the injunction have been most often directed against the Federal courts. They not infrequently assert that the judges of these courts, being appointed, instead of elected by the people, are less likely to be in sympathy with workingmen than the judges of the State courts. This question does not call for discussion here. It has been maintained by some writers that the Federal courts have taken jurisdiction of cases and have issued injunctions regarding matters not properly falling within their jurisdiction. It is certainly true that numerous injunctions have been issued by them in labor disputes not directly affecting interstate carriers; but presumably in such instances the ground for jurisdiction has ordinarily been the fact that the litigants were citizens of different States. In the Debs case the counsel for the defendants raised the point that the injunction was not issued in a suit brought by any par-

ticular individual or corporation, but in one brought by the Federal Government itself by its Attorney-General. The court, however, held that the Government had a right to employ the agency of its own courts to carry out its constitutional authority to protect interstate commerce, and that it moreover had a property interest in the mails which would justify the issue of injunctions. As already suggested, the Federal courts frequently cite the anti-trust act of 1890 as a justification for their use of the process.

"BLANKET" INJUNCTIONS.

The issue of so-called "blanket" injunctions, directed against numerous persons not named, as well as against specifically named persons, has also been the subject of criticism both by workingmen and by some lawyers. Very many recent injunctions regarding labor disputes have been exceedingly broad. The Debs injunction of 1894, for example, was addressed to certain named persons, and "all other persons whatsoever who are not named herein, from and after the time when they shall severally have knowledge of such order." Personal service of the injunction order is not provided for under such circumstances, but the orders are published in the newspapers and posted in various places, and strikers generally are supposed to have knowledge of their existence. To this practice it is objected that the ordinary rules of law have always required that those affected by an order shall be specifically named and shall be personally served with the papers. It is also declared that such wide-reaching orders amount to an attempt to supplant ordinary laws and processes by judicial decrees—that this practice becomes "government by injunction." The courts have, however, usually held that it is as legitimate to direct an injunction to many persons as to few; and that where it is impossible to secure direct personal service, the extraordinary forms of service which are allowed in regard to other papers are permissible here. This position was affirmed by the Supreme Court in the Debs case.

RESTRICTION OF USE OF INJUNCTIONS.

Some form of legislative restriction upon the use of the injunction, and regulation of the methods of trial for contempt of court, is often advocated. The great railway brotherhoods have united in recommending legislation of this sort by Congress and the several States, and many other leading labor organizations have taken the same position. A pending bill, which has met with their favor, provides for the division of contempts of court into two classes, direct and indirect. Only contempts committed in the presence of the court, or near thereto, are to be considered direct contempts. All others are indirect contempts, and these would include practically all violations of injunction orders. In the case of indirect contempts, under the

proposed bill, the party accused would have the same right as in criminal cases to produce testimony, to be confronted with witnesses against him, and to demand a trial by jury. It is also proposed to permit appeals from judgments in cases of indirect contempt.

An act of this general character was placed on the statute books by the legislature of Virginia in 1898, but was held unconstitutional by the supreme court of that State, with the declaration that the courts were established by the State constitution itself and were coordinate with the legislature, and that the legislature had no right to restrict the ability of the courts to protect themselves by proceedings in contempt, in accordance with the universal precedent both in this country and in Great Britain.

It is undoubtedly desirable that this extraordinary process of injunction should be employed with greater conservatism than has been the case during the past decade. However severely the acts of strikers against which injunctions are usually directed may be condemned, this is, in many cases, scarcely a proper method of checking them. Some injunction orders have gone too far in the scope of acts prohibited, and have been too indiscriminately applied to great bodies of people. It seems desirable that statutes should be enacted, defining with greater precision the acts of workingmen which are permissible, or which are civilly or criminally unlawful, in order that a clearer indication of the limits of the injunctive process may be given. It would seem more in accordance with legal procedure to limit the application of injunction orders than to provide for jury trial of violations thereof.

METHODS OF EMPLOYERS IN LABOR DISPUTES.

The three practices of employers in connection with labor disputes to which workingmen most frequently object are the importation of labor, often from other States or countries, the employment of "Pinkerton men" or other armed guards, and blacklisting.

IMPORTATION OF LABOR.

The first thought of an employer whose men have struck is to replace them. Often the supply of labor in the immediate vicinity is insufficient, while still more often other workingmen who might take the places of the strikers are deterred from doing so, either by the orders of labor organizations or by sympathy for the strikers. The employer accordingly seeks men in other localities. The importation of workingmen from foreign countries to take the place of strikers was formerly quite a common practice. Considerable numbers of foreigners were brought to the coal mines in this way. The alien contract-labor law has largely done away with this practice. In a large number of strikes, however, employers have sent agents to

other States to collect bodies of men and "import" them. In some instances the men thus imported are of much lower skill and standard of living than the strikers. Evidence before the Industrial Commission shows, for example, that negro laborers have, in several instances, been brought from long distances for this purpose. This occurred at Pana and Virden, Ill., and in recent Colorado mining strikes. The opposition of workingmen to the importation of lower classes of labor is so strong that it has at times resulted in physical violence.

There can be no question of the legal right of employers to seek labor in other States and to employ any kind of men whom they see fit. It may, however, be bad policy for employers themselves, and injurious to the community, to bring in men of low skill and a low standard of living. It is doubtless true at times that such imported laborers are influenced by unduly glowing accounts of the conditions under which they will work, and that they are not always informed of the existence of a strike. In some cases it is the intention of the employer who hires men of this class to keep them only long enough to break the strike, and to permit the gradual employment of more competent hands, possibly of the strikers themselves. An injustice may thus be done both to the men imported and to the strikers; while, in any case, if the new employees are distinctly of an inferior grade, the social interests of the immediate community are injured, and often perhaps the general economic interests of society as well.

"PINKERTON MEN."

Actual or threatened violence by strikers at times justifies and necessitates the protection of property and of employees by force of arms. Employers have a right to call for the protection of the public peace officers. If the local peace officers, whether the police of cities or county sheriffs and constables, find it impossible to maintain order, it is the duty of the local authorities to swear in additional peace officers and to protect property and life. If necessary, the aid of State troops may be called for.

The chief objection, aside from the doubt as to its technical legality, which is made to the practice sometimes resorted to by employers of hiring special police, detectives, Pinkerton men, and other armed guards to protect their property in labor disputes, is that such hired officers are likely to be extreme in their measures. Being often from other localities or States, they have no understanding of the matters at issue in the dispute, no sympathy with the workingmen, and are therefore disposed to go as far as the law allows, or even further, in resisting the acts of the men. The reply made by employers is that local authorities are often improperly biased, and therefore unwilling or, perhaps, unable to enforce order effectively; that sympathy with

the cause of the workingmen in a particular dispute may lead the local authorities or the peace officers under their control to permit acts which are unlawful, quite regardless of the merits of the dispute: and that they are compelled to resort to the natural right of self-defense.

Statutes have been passed in a considerable number of States prohibiting the private importation of armed men from other States for the protection of property. Such legislation is doubtless constitutional, and, perhaps, also expedient, since it is not desirable from the general political standpoint that private citizens should take the enforcement of law into their own hands where local authorities exist. If the duly constituted peace officers and local authorities fail to perform their duty in protecting life and property, the remedy must be through appeal to some higher authority, or through the election of more upright and competent men.

BLACKLISTING.

Many witnesses before the Industrial Commission maintain that, despite the fact that legislation against blacklisting of employees has been passed in many States, the practice still exists to a considerable extent. Witnesses representing labor without exception denounce the blacklist as unjust. They hold that, while it may be proper for employers to warn one another against conspicuously dishonest, unfaithful, or incompetent employees, it is in derogation of the rights of individual workingmen and of the working class, that men whose only offense is loyalty to a labor organization or participation in a strike, should have their names blacklisted by associated employers so as to render it practically impossible for them to secure work. The effect of the blacklist is ordinarily immensely more injurious to the men concerned than a boycott, which is the counter weapon to the blacklist, could be to an employer. At the most, only a fraction of the customers of a boycotted establishment will withdraw their patronage as the result of a boycott, while all the employers in a given industry in a particular section of the country have at times confederated to prevent blacklisted men from getting employment, so that they have been practically forced to leave the trade altogether. Legislation on this subject seems, therefore, justifiable and has usually been upheld as constitutional.

The enforcement of a law against blacklisting is plainly very difficult. The circulation of lists of employees can not readily be ascertained, and the workingman who is refused a place can not know that a blacklist is the reason for such refusal. It is complained also that when workingmen are discharged they are sometimes given letters stating the fact of their employment, and possibly including a formal recommendation, but with secret marks or other indications to show

that the men are to be considered objectionable. The principal complaint of such methods comes from railroad employees and from coal miners. It seems to be generally believed, however, that the more formal and direct methods of blacklisting have largely disappeared.

It is a natural and common practice of employers to ask applicants for work to present letters showing their previous employment and the reasons for discharge. The legislation directed against blacklisting quite uniformly permits employers to furnish to employees a statement of the cause of discharge, and often requires such a statement to be given on demand. If the employer who discharges a man sees fit to make such a letter unfavorable to him, or if he barely states the fact that the employee has struck, the letter becomes an injury rather than an advantage to the workingman. Some labor leaders, such as Mr. Fuller,[1] legislative agent at Washington of the railroad brotherhoods, go so far as to urge legislation prohibiting employers from requiring letters of recommendation or statements of any sort from any other employer, and even prohibiting them from writing to the former employers to learn the record of applicants. Obviously legislation of this sort, even if it could be justified in principle, would be incapable of enforcement. An effective defense against unjust discrimination against men seeking employment because of former alleged offenses is increased strength of labor organizations, and a greater disposition on the part of employers to recognize the necessity and advantages of labor organizations.

III.—PROTECTION OF EMPLOYEES IN THEIR LABOR.

One of the most important problems growing out of modern methods of large-scale industry is that of protecting the health, safety, and general welfare of those employed. So long as manufacturing, for example, was mostly conducted in small home establishments, the character of the implements employed, and the conditions under which work was done, were such that the individual had far greater control over his own health and safety than he has in large establishments. It is perhaps doubtful whether, with the lower stage of civilization then prevailing, injuries to health and to safety arising from the processes of production were fewer in the early days than at present. Such injuries as occurred, however, were more largely due to personal carelessness on the part of the workers, or to their poverty, than to the nature of the establishments and machinery. Under modern methods of production the employee is usually but a single private in an army. He works in a great institution, over the conditions of which he has

[1] Reports Industrial Commission, Vol. IX, p. 17.

little control. He employs complicated machinery, driven by a power not his own, and controlled by other employees. The conditions under which he works, as regards health and safety, are chiefly determined by his employer and by his fellow-workmen. Regulation of those conditions by legal provisions becomes therefore more and more necessary, while the large size of the establishments in which industry is conducted makes such regulation much more feasible than it was when multitudes of small separate establishments existed.

The injuries which may come to working people in connection with their labor may be (1) injuries to general health from insanitary conditions, or (2) injuries to life and limb by accident. Injuries to health may result from (*a*) general conditions such as are likely to be found in establishments of any class, or (*b*) from specially unsanitary characteristics of particular employments. A similar distinction may be made as between different classes of injuries to life and limb.

Two classes of legislation as regards industrial injuries are possible. The one aims to prevent such injuries; the other to compensate for them. It is obviously socially desirable that preventive measures should be made as effective as possible. As regards injuries to health from insanitary conditions, it is practically impossible to provide for compensation, and preventive measures only are feasible. This follows from the obvious impossibility in most cases of tracing sickness directly and exclusively to conditions of employment. On the other hand, it is ordinarily entirely possible to ascertain whether an injury through accident occurs in connection with employment, though the blame for the accident may not be readily determinable. Modern legislation in many cases therefore aims not merely to reduce the number of accidents to a minimum by preventive measures, but to provide for the compensation of the injured workman, especially in case the injury is due to the fault of the employer, and often regardless of the question of blame.

One of the conditions of employment which has an important influence on health, especially in certain classes of occupations, is the number of hours of employment. This subject has already been discussed above. Another source of danger both to health and to safety arises from the employment of those who are incompetent or who are unfitted to bear the strain of labor. Regulation of the labor of women and children is accordingly an important feature of modern legislation regarding labor matters. The same authorities whose duty it is to enforce laws regarding the sanitary condition and safety of establishments are also frequently intrusted with the enforcement of laws concerning the employment of women and children, concerning hours of labor, and concerning still other matters.

HEALTH AND SAFETY IN FACTORIES AND MERCANTILE ESTABLISHMENTS.

DESCRIPTION OF INSANITARY AND UNSAFE CONDITIONS.

No thorough investigation by statistical methods has ever been made, either in the United States or in foreign countries, regarding the effects of different sanitary conditions in manufacturing and mercantile establishments generally, or in particular classes of industry, upon the health of the employees. Such an investigation would obviously be exceedingly difficult, but it is nevertheless highly desirable that some attempt to secure more thorough information than is now available should be made. While many sicknesses could not be definitely attributed to conditions of employment, it is beyond question true that, as regards at least certain particularly unhealthful trades, some rough but highly useful statistical measurement of their effects might be secured. Even in those occupations where the processes do not especially involve the production of dangerous fumes and gases, extremes of temperature, or other peculiarly unfavorable conditions, the system of factory production may readily contain elements of menace to health. For instance, insufficient air, inadequate light, strained positions in work, dirty and infectious floors and walls, all conditions injurious to health, may result from carelessness or unscrupulousness of the employer. Again, wherever powerful machinery, not directly under the control of the hand of the worker, is employed, the danger of accident exists, and this danger may be greatly increased if the machinery is insufficiently guarded or is defective in its construction, or if other employees are careless in operating it. Similarly in the construction of buildings and in various other mechanical operations the danger of accident is always present.

STATISTICS OF ACCIDENTS.

The statistics of the number and causes of accidents in manufacturing establishments in the United States are of the most meager character, differing greatly from those regarding accidents in mines and on railroads, which are reasonably complete and satisfactory. The Pennsylvania factory inspector for 1900 reported 113 fatal accidents, 479 serious, and 1,965 less serious accidents, among 773,443 persons employed in the shops and factories of that State. In Massachusetts, for 1899, the accidents reported by the factory inspection department numbered 1,423, of which 41 were fatal. This State does not require accidents due to other causes than machinery to be reported, though a considerable number of such other accidents are returned. Statistics regarding accidents in manufacturing and mechanical industries have been collected from year to year by the New York Bureau of Labor

Statistics. These, as in the other two States named, are confessedly very imperfect and almost certainly understate the number of accidents. The figures, such as they are, are shown in the following table, which includes accidents in mines after 1895, although this fact would not greatly affect the statistics, since the number of persons employed in mines in New York is small.

Accidents in New York factories and mines.[1]

[From report of New York Bureau of Labor Statistics, 1899, p. 563.]

Year ending November 30—	Fatal.	Other.	Total injuries.
1887 (6 months)	19	145	164
1888	103	527	630
1889	56	591	647
1890	37	708	745
1891	110	790	900
1892	53	917	970
1893	45	727	772
1894	78	857	930
1895	71	964	1,035
1896	48	662	710
1897	47	1,187	1,234
1898	37	1,077	1,114
1899	48	1,578	1,626

[1] The inspection of mines was combined with that of factories in 1895.

It is probable that the apparent increase in the number of injuries during the last three years covered by the table is due chiefly to greater care in collecting the statistics.

During 1899 the New York bureau of labor statistics made a special investigation of accidents in view of the movement in that State for legislation regarding employers' liability. The reports secured covered three months only and can not be considered as thoroughly typical, particularly in some of the smaller industries in which statistics would have to be secured for a considerable period of years in order to show distinctly the degree of danger.

The following table shows the results of this investigation, which covered 4,931 establishments, having 452,425 employees:

Ratio of injuries to persons employed.

[Report New York Bureau of Labor Statistics, 1899, p. 566.]

Industries.	Number of injuries in 3 months.	Proportionate number in 1 year.	Number employed.	Number injured to each 1,000 employed.
I. Stone and clay products	75	300	19,764	15.18
II. Metals, machinery, and apparatus	817	3,268	123,467	26.47
III. Wood	145	580	31,482	18.42
IV. Leather, rubber, pearl, etc	25	100	31,169	3.21
V. Chemicals, oils, and explosives	145	580	13,164	44.06
VI. Pulp, paper, and cardboard	87	348	8,201	42.43
VII. Printing and allied trades	88	352	38,298	9.19
VIII. Textiles	133	540	59,709	9.04
IX. Clothing, millinery, laundering, etc	22	88	65,220	1.35
X. Food, tobacco, and liquors	178	712	45,600	15.61
XI. Public utilities	69	276	7,043	37.38
XII. Building industry	61	244	9,313	26.20
Total	1,847	7,388	452,425	16.33

While for the reasons above indicated this table is unsatisfactory as a basis of comparison between different trades, it doubtless gives a fairly accurate view of the average number of injuries in industrial establishments of all classes combined. During three months accidents of one sort or another occurred in nearly one-third of the establishments reporting. The number of persons injured more or less seriously was 1,847, or at the rate of 7,388 per year. This would mean that, for each 1,000 persons employed, 16.33 would at some time during each year suffer a personal injury as the result of their work. It is, to be sure, true that most of the injuries in employments of this class are not fatal. Only 29 of the 1,847 resulted in death. This proportion is vastly smaller than in the case of railroads and mines, as will be seen by statistics presented below.

The following table contains a classification of the injuries reported by employers during the three months covered by the New York investigation:

Nature of injuries, New York.

[Report cited, p. 571]

Fatal	29
Non-fatal:	
Internal	29
Loss of eye	8
Head and face, except the eye	191
Loss of limb	3
Arms and hands	336
Fingers	638
Legs and feet	381
Other parts of the body or several parts at once	197
Not reported	35
Total	1,847

While, as is to be seen from the table, many of the injuries were not dangerous, yet most of them were sufficiently serious to cause inability to work for a considerable period of time. In 1,348 cases in which the length of time lost was reported, the average loss per capita was 15 days.

FACTORY LEGISLATION.

In view of such conditions regarding the health and safety of employees in factories as have been set forth, the legislatures in most States where manufacturing industry is at all highly developed have enacted laws seeking to regulate factories and workshops, and to a less extent mercantile establishments as well.

The justification of legislation of this sort, as sustained by the courts, is found in the police power of the State, and in the inability of employees to secure through private agreement with their employers such protection as is judged necessary for the public welfare. Testi-

[illegible] the [illegible] [illegible] [illegible]

The following table shows the duties of the factory inspectors in some detail. A cross indicates whether the law in the State covers the point indicated.

Duties of factory inspectors in the United States.

[From "Inspection of factories and workshops," by William Franklin Willoughby (Monographs on American Social Economics, VII), 1900.]

Duty of inspectors to enforce laws concerning—	Maine.	Massachusetts.	Rhode Island.	Connecticut.	New York.	New Jersey.	Pennsylvania.	Delaware.	Ohio.	Indiana.	Illinois.	Michigan.	Wisconsin.	Minnesota.	Missouri.	Nebraska.	Tennessee.	Washington.	Kansas.	California.
Employment of children	×	×	×	...	×	×	×	...	×	×	×	×	×	×	...	×	...	...	...	×
Employment of women	×	×	...	...	...	×	×	×	...	×	×	×	×	×	...	...	...	...	...	...
Payment of wages	×	×	...	...	×	×	×	...	×	...	...	...	...	...	...	...	...	...	×	...
Lunch hour, women and children	...	×	...	...	×	...	×	...	...	×	...	×	...	...	...	...	...	...	...	...
Seats for females	...	×	×	×	×	×	×	×	×	...	...	...	...	×	×	×	...	×	...	×
Separate toilet facilities for the two sexes	...	×	×	...	×	×	×	×	×	×	...	×	...	×	×	...	...	...	...	×
Guarding machinery	...	×	×	×	×	×	×	...	×	×	...	×	×	...	×	...	...	...	×	...
Cleaning machinery in motion by children and women	...	×	×	×	×	×	×	...	...	×	...	×	...	...	×	...	...	...	...	...
Mechanical belt and gearing shifters	...	...	...	...	×	...	×	...	...	×	...	×	...	×	...	...	...	...	...	...
Communication with engineer's room	...	×	...	...	...	...	...	...	...	...	...	...	×	...	...	...	...	...	...	...
Guarding vats containing molten metal or hot liquids	...	...	...	...	×	×	×	...	×	×	...	...	...	...	...	...	...	...	×	...
Railings on stairways	...	...	...	...	×	...	...	...	×	×	...	×	...	...	...	...	...	...	...	...
Regulation of dangerous or injurious occupations	...	×	...	...	...	×	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Use of explosive or inflammable material	...	×	...	...	...	×	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Exhaust fans, blowers, etc., for removal of dust, etc	...	×	...	×	×	×	...	...	×	×	×	×	...	×	×	...	...	...	...	×
Guarding elevator and hoistway openings	...	×	×	×	×	×	×	...	×	×	...	×	...	×	×	...	...	...	...	...
Fire escapes	...	×	...	...	×	×	×	...	×	×	×	×	×	×	×	...	...	...	...	...
Doors to swing outward; to be unlocked	...	×	...	...	×	×	...	...	...	×	...	...	...	...	...	...	...	...	...	...
Sanitary condition	×	×	×	×	...	×	×	...	×	...	...	...	...	×	×	...	...	...	...	×
Ventilation	...	×	×	...	×	×	×	...	×	×	...	...	...	...	×	...	...	...	×	×
Lighting	...	...	...	...	...	×	×	...	×	...	...	...	...	...	...	...	...	...	×	...
Heating	...	...	...	...	...	×	×	...	×	...	...	...	×	...	...	...	...	...	×	...
Overcrowding	...	...	...	...	×	×	...	...	...	×	...	...	...	...	×	...	...	...	...	...
Lime-washing or painting walls	...	...	...	...	×	×	...	...	...	×	...	...	...	...	×	...	...	...	...	...
Reporting accidents	...	×	×	...	×	×	×	...	×	×	...	...	...	×	×	...	...	...	...	...
Regulation of sweating system	...	×	...	...	×	×	×	...	...	×	×	...	...	...	...	...	...	...	...	...
Inspection of mercantile establishments	...	...	...	...	×	...	×	...	...	...	×	...	...	...	...	...	...	...	...	...
Inspection of mines	...	...	...	...	×	×	...	...	...	...	...	...	...	...	×	...	×	...	...	...
Inspection of steam boilers	...	×	...	...	...	...	×	...	...	...	...	...	...	...	...	...	...	...	...	...
Inspection of schoolhouses, theaters, etc	...	×	...	...	...	...	...	...	×	...	...	...	...	...	...	...	...	...	...	...
Regulation of bakeries	...	...	...	×	×	×	×	...	×	...	...	...	×	...	×	...	...	...	...	...
Approval of plans for factories	...	×	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

ENFORCEMENT OF LAWS—INSPECTORS.

The several American States and those foreign countries which have enacted laws protecting employees and regulating their hours in factories and in mines have found it necessary, in order to secure the enforcement of such legislation, to create staffs of inspectors with police powers. The duties of these inspectors include the enforcement of the laws providing for safety and sanitation; those prohibiting child labor, in which case usually cooperation is maintained with the school

authorities and the truant officers where such officers exist; those for the regulation of sweat shops, bake shops, and mercantile establishments; those regulating employment on public works, and so on.

About half the States which have provided for factory inspection have combined this service with the bureau of labor statistics. Experience has shown that this combination of duties is unfortunate. The States which have accomplished most in the enforcement of factory laws are those which have a separate organization for the purpose. The duties of a factory inspector and those of a commissioner of labor statistics are not only so dissimilar that the qualifications for both are seldom united in a single person, but their functions are even antagonistic; for while the labor commissioner must depend upon the good will of manufacturers for his information, a factory inspector is often bound to enforce the law against the manufacturers.[1]

The existence of an expert staff of State inspectors is an assistance as regards all classes of employers. It enables those who have at heart the interests of their work people to gain information of the best appliances and improvements for their protection and health. The inspectors often make suggestions not covered by the laws, which are heartily accepted by the better employers. On the other hand, where establishments do not come up to the legal standard, the inspector fills the position of the State's prosecuting witness, and in one State, Pennsylvania, he has the remarkable power of revoking the license of the factory and thereby closing the establishment. The employees can not be relied upon to enforce such laws, since, although they are the ones most directly interested, they fear the loss of employment through the hostility which would be created by a legal prosecution. The better class of employers for obvious reasons also refrain from such prosecution. At the same time the employers who have not provided the devices for protecting machinery or securing ventilation or improving sanitation, have an advantage in competition with others who have undertaken these improvements at considerable expense. The factory inspector's duties in such cases consist in bringing the less scrupulous employer up to the level set by the law, and thus placing all employers on the same competitive level. For this reason uniformity of factory legislation throughout the several States, in those industries which are competitive, is desirable, and especially desirable is it that the laws be strictly enforced. It is brought to the attention of the Commission that several States do not provide an adequate force of inspectors, and on this account the law is not fully enforced.[2] Failure to enforce a law of this kind is alleged by a well-informed witness to be worse than entire absence of the law, since it

[1] Willoughby, Inspection of Factories and Workshops (Monographs on American Social Economics, VII), pp. 22, 23.

[2] Reports Industrial Commission, Vol. VII, pp. 227, 228.

acts as an opiate to the public conscience and keeps people from effectively demanding better conditions.

Employers and employees who have appeared before the Commission have quite generally agreed upon the usefulness and the importance of factory legislation and its strict enforcement. The main criticism brought out is that of the lack of uniformity. Massachusetts has been the pioneer in factory legislation, and in that State the best results have been secured. At first there was great difficulty in enforcing the laws, but at present they work satisfactorily. Employers are satisfied, and the health and safety of employees have been greatly promoted.

An encouraging feature of factory legislation is the stimulus which it furnishes, not only to the adoption of existing safety and sanitary appliances, but also to the invention of new and improved ones. There has been a marked advance, not only in the invention of labor-saving machinery, but also in the invention of labor-protecting machinery, such as dust consumers, ventilators, devices for reducing heat, guards for pulleys, saws, emery wheels, etc. Factory inspectors who keep abreast with these improvements are able to bring them to the attention of foremen and employers and often to secure their adoption. The International Association of Factory Inspectors, composed of officials from eleven or twelve American States and the Canadian provinces, furnishes the means for interchange of opinion and information regarding these appliances, and the work of this association is to be commended.[1]

SPECIALLY INJURIOUS TRADES.

Besides the danger of injury from machinery and from general insanitary conditions, there are certain specially dangerous or injurious trades, in which injury by poisoning, disease, etc., is incidental to trade processes as at present conducted. Mr. William English Walling, formerly a factory inspector in Illinois, in a paper read before the Convention of Factory Inspectors in 1900, classified these dangerous trades as follows:

1. Trades in which lead is a poisonous element:
   - The manufacture of earthenware and china.
   - File cutting.
   - The manufacture of white lead.
   - Lead smelting.
   - The use of lead in print or dye works.
   - The manufacture of red, orange, or yellow lead.
   - Glass polishing.
   - Enameling of iron plates.
   - Enameling and tinning of hollow metal ware and cooking utensils.
   - Processes in which yellow chromate of lead is made, or in which goods dyed with it undergo the process of building, winding, weaving, etc.

[1] Reports Industrial Commission, Vol. VII, p. 75.

2. Trades which produce other chemical poisons:
   Manufacture of paint and color.
   Extraction of arsenic.
   Dry cleaning.
   Paper staining, coloring, and enameling.
   Hatters and furriers' work.
   The manufacture of matches.
   Chemical works.
   Bronzing and metallochrome powder in lithographic works.
   India-rubber work.
   Dyeing with certain dyes.
   Mixing and casting of brass, gun metal, bell metal, white metal, phosphor-bronze and manila mixture.
3. Trades in which anthrax or lockjaw is an incident:
   Wool sorting.
   The handling of hides and skins.
   Hair factories.
   Brush making.
   Bone factories.
   Fellmongers' works.
   Furriers' works.
   Tanneries.
   Wool combing.
   Blanket stoving and tentering.
   Warp dressing.
   Carbonizing and grinding of rags.
   Flock making.
   Feather cleaning.
4. Trades in which the danger arises from injurious particles in the air, or from dust:
   Basic slag works.
   Manufacture of silicate of cotton.
   File cutting.
   Flour mills.
   Trades which use grindstones or emery wheels.
   China scouring.
   Silk combing.
   Flax scutching.
5. Trades in which accidents are so frequent as to demand special legislation:
   Metal works which use converters.
   Electrical generating works.
   Bottling and bottle testing.
   Quarries.
   Manufacture of salt.
6. Processes which require a sudden change from great heat to cold, and vice versa:
   Lacquering and japanning.
   Galvanizing of iron.
   Work carried on in furnaces and foundries.
7. Processes that require artificial humidity:
   Cotton spinning, weaving, etc.
   Flax spinning, weaving, etc.
   Wool spinning.
   Silk spinning.

As an example of disease resulting from poisoning may be mentioned plumbism, the disease caused by inhaling particles of lead. One

its first symptoms is a blue gum, followed by loosening and dropng out of the teeth. Blindness, paralysis, and death in convulsions ten follow. Besides plumbism, there are serious indirect results om lead poisoning in a number of different occupations.

Legislation intended to combat the dangers of these specially injuus trades is much less developed in this country than in several ıropean countries. Precautions which have been prescribed by public thority in Great Britain to prevent or alleviate injury from dangerıs trades, especially from poison and dust, are classified as follows: (1) Preventing fumes or dust from arising in the first instance, as by e moistening of white lead or the sprinkling of wool-sorting rooms ith a disinfectant solution; (2) devices for carrying off the fumes or ıst before they reach the worker, by fans, hoods, etc.; (3) protection the person of the worker, especially those parts of the body where is most needed, as by head coverings, respirators, etc.; (4) requiring ıths and changes of clothing where the workers are surrounded ; injurious dust; (5) prompt provision of antidotes and of medical tendance at the factory; (6) in some cases a weekly visit from the ıysician is required for the examination of every worker for cases insidious injury; (7) in order to prevent injury from poison from ıaching a more serious stage, every such case must be reported both the district inspector of factories and to the certifying surgeon, ho may prohibit the individual affected from continuing at the occuıtion; (8) elimination of persons unfit for injurious occupations ecause of youth, sex, personal idiosyncrasies, or accumulated effects labor at the trade.[1]

The procedure prescribed by the British factory and workshop act or securing protection in dangerous trades is as follows: When the ecretary of state is satisfied that any process is dangerous, he has ıthority to draw up regulations and publish them. Any person, ither employer or workman, is then entitled to submit in writing bjections to any of the regulations. The secretary of state may then mend the regulations to meet such objections; otherwise he must irect a public inquiry, at which all persons affected are entitled to ppear. Regulations as finally made are laid before Parliament, and ıay be annulled within forty days by either house.

While foreign legislation, especially that of Great Britain, thus takes ognizance of peculiarly injurious trades, there has been very little legılation in the United States which recognizes them. The most imporınt exceptions are that several States have laws requiring provision or the removal of the dust arising from emery wheels, and that there some legislation for the protection of children and young persons

[1] Fourteenth annual convention of the International Association of Factory Inspectrs of America, pp. 35–42.

engaged in injurious trades, which, however, often fails to accomplish its purpose by not being sufficiently explicit, and by not conferring sufficient discretionary power upon the factory inspectors or other officials.

Besides the trades which are injurious in the sense explained above, there are still others which in many cases lead to disease or to shortening of life. The injury arises sometimes from a cramped or unnatural posture. Thus the stooping position of workers at sewing machines often leads to tuberculosis, and it has frequently been noticed that workers in sweat shops are superannuated at or even before middle age. A still worse case of this kind is the employment of children at button-holing machines in a one-sided posture, which is said to lead invariably to curvature of the spine. The constant jarring of factory buildings by heavy machinery is sometimes a source of injury to the workers. Another danger which may be classified under this head is injury to the eyesight from trades requiring close application.

It is obvious that the injuries incident to specially dangerous trades are generally difficult to prevent by public regulation, because they are of such a gradual and insidious character; and injuries arising from cramped postures are exceedingly difficult to deal with. Injury to the eyesight may be alleviated by requiring the best possible light. Where there is no such available means of preventing injury, the best the law can do is to restrict the occupation to adults who are shown by medical examination to be strong enough to withstand the injury, and to limit the hours of labor. The British legislation contains examples of both these kinds of regulations. Thus, in the white-lead works no female may be employed without a certificate of fitness from a physician, and no person may be reemployed, after an absence from illness, without such a certificate; no child or young person may be employed in vulcanizing india rubber in any room in which bisulphide of carbon is used; no person may be employed for more than five hours in any day in any room in which bisulphide of carbon is used, nor for more than two and one-half hours at a time without an interval of at least half an hour. In lead smelting no person may be allowed to remain at work in a flue for more than two hours at a time.

It is evident that regulations intended to prevent injury from poisoning, dust, moisture, germs, etc., must be based upon detailed scientific and technical knowledge of the conditions. If the United States Department of Labor had the means to enable it to employ chemical and medical experts, it could perform a most valuable service by making an investigation as to the need for protection in dangerous and injurious trades.

A summary of the British factory and workshop act, 1901, from the Labour Gazette of September, 1901, showing the scope of British legislation on this subject will be found in this volume as Appendix No. VIII.

SAFETY AND SANITATION OF MINES.

CONDITIONS OF MINES.

The conditions under which the miner works are in most instances more unhealthful and at the same time more dangerous than those under which ordinarily employees in manufacturing industries work. The absence of light is in itself an element of injury to the health of underground workers. Still more serious is the impurity of the air which, despite artificial ventilating apparatus, they are frequently, perhaps usually, compelled to breathe. The dampness of the atmosphere in many mines is injurious, while in some other cases mines are dry and filled with noxious dust. Often, too, mining has to be carried on at depths so great that the heat is trying, while in many cases the veins of ore or coal are of such a character as to require work in most confined and strained positions.

Because of these insanitary conditions of their labor, miners have generally insisted that their workday should be shorter than in most other occupations. The argument on this subject has been set forth elsewhere. Because of these conditions, likewise, effective measures on the part of employers are necessary to protect as far as possible the health of underground workers. Ventilation and draining of mines is ordinarily essential in order that work may be carried on at all. They are needful also to prevent accidents and explosions, but for the sake of health it is desirable that means of drainage, and more particularly of ventilation, should be provided in more liberal manner than would be necessary merely to make work possible and safe.

ACCIDENTS IN MINES.

The effects of insanitary conditions in mines can scarcely be statistically measured. The effects of unsafe conditions upon life and limb can be fairly ascertained from the statistics of accidents, which have been secured in some of the leading mining States. The following figures show, for the coal mines of Pennsylvania and Illinois, the number of persons killed and injured during recent years, as compared with the total number employed:

Number of persons killed and injured in and about Pennsylvania coal mines, 1891–1900.

[Report of Pennsylvania Bureau of Mines, 1900, pp. lx, lxi.]

Year.	Total number employed.	Number killed.	Per 1,000 persons employed.	Number injured.	Per 1,000 persons employed.
1891	196,958	665	3.37	1,317	6.68
1892	209,186	551	2.63	1,416	6.76
1893	219,971	587	2.67	1,415	5.70
1894	225,881	570	2.52	1,278	6.43
1895	227,709	576	2.53	1,494	6.56
1896	231,466	681	2.94	1,563	6.75
1897	236,040	572	2.42	1,532	6.49
1898	230,222	609	2.64	1,592	6.91
1899	232,023	719	3.09	1,517	6.53
1900	252,744	675	2.67	1,640	6.49

Number of persons killed and injured in and about Illinois coal mines, 1883–1900.

[Illinois Coal Report, 1900, pp. 42, 49.]

Year.	Number killed.	Number injured.	Total number employed.	Number of employees to each life lost.	Number of employees to one man injured.
1883	134	231	23,989	179.6	104
1884	46	197	25,575	566	130
1885	39	176	25,436	652.4	145
1886	52	171	25,846	497	151
1887	41	180	26,804	654	149
1888	55	179	29,410	534.7	164
1889	42	201	30,076	716.1	150
1890	53	294	28,574	539.1	97
1891	60	367	32,951	549	90
1892	57	370	33,632	590	91
1893	69	403	35,390	513	88
1894	72	521	32,635	453.3	63
1895	75	606	31,962	426.2	53
1896	77	672	33,054	429.2	49
1897	69	518	33,788	489.7	65
1898	75	438	35,026	467	80
1899	84	597	36,991	440	62
1900	94	611	39,384	419	65
Average	66.3	374	31,137	469.4	83

From these tables it will be seen that the number of fatal and nonfatal accidents in coal mines has remained roughly uniform and exceedingly large during the years covered by the figures. Every year of the past decade has seen from 500 to 700 Pennsylvania miners killed and from 1,200 to 1,650 injured. By comparing these figures with the total number employed, it will be seen that on the average about 1 man out of every 400 employed in the mines is killed yearly and about 1 out of 150 injured. In 1897 the number of persons killed was in the lowest proportion, 2.42 to every 1,000 persons employed, while in 1891 the proportion was highest, 3.37 per 1,000 employed. The number of persons injured has ranged from 5.7 to 6.91 per 1,000 employed.

The bituminous mines of Pennsylvania show a very much lower proportion of accidents than the anthracite mines. The latter are deeper and more subject to noxious gases, and the veins are more frequently thin and tilted. The proportion of fatal accidents to 1,000 employees in the anthracite mines is in most years considerably over 3 per 1,000 persons employed, while in the bituminous mines the proportion averages rather less than 2 per 1,000 employed.

The mines of Illinois are all bituminous mines and the proportion of accidents is roughly the same as in the bituminous mines of Pennsylvania. On the average, for the years 1883 to 1900, one employee lost his life through mine accidents for each 469.4 persons employed. Apparently the Illinois authorities are more active in securing statistics regarding injuries than those of Pennsylvania, since the proportion of nonfatal accidents as compared with fatal accidents is very much larger in the former State. On the average, for the years named, 1

an out of every 83 employed in the mines received some injury. It highly probable that the increase in the number of persons killed id injured during recent years, as compared with the early eighties, is ie in larger degree to the greater fullness of returns than to actual crease in the danger of mining. At the same time it must be remem-ered that, as time elapses, mines become deeper, and more difficult id dangerous veins are worked, so that the liability to accident, eans of protection being proportionately the same, is likely to increase. here is reason to believe that the somewhat stringent laws of both ennsylvania and Illinois regarding the protection of life and safety i coal mines, and the reasonably efficient method in which they are nforced, have made conditions materially better than they would therwise have been; that relatively to the depth of the mines and other unavoidable conditions the number of accidents is fewer than efore, notwithstanding the fact that accidents, as compared with the otal number of persons employed, have increased in Illinois, and have emained practically stationary in Pennsylvania.

The following tables show the causes of fatal accidents in anthracite ines, in the Pennsylvania bituminous mines, and in the Illinois coal ines. Similar statistics regarding the causes of nonfatal accidents re not available.

Number and percentage of each class of fatal accidents in and about the Pennsylvania bituminous coal mines, 1891–1900.

[Report Pennsylvania Bureau of Mines, 1900, p. xxxviii.]

Causes.	Number.	Percentage.
alls of coal, slate, and roof	1,181	67.14
line cars	245	13.92
xplosions of gas	186	10.58
xplosions of powder and blasts	43	2.44
alling down shafts and slopes	17	.97
lachinery	3	.17
ules	3	.17
lectric shock	17	.97
uffocation	18	1.02
iscellaneous causes	46	2.62
Total accidents inside	1,759	96.22
ars	39	56.52
lachinery	9	13.04
uffocation	1	1.45
oiler explosions	6	8.70
iscellaneous causes	14	20.29
Total accidents outside	69	3.78

Number and percentage of each class of fatal accidents in and about the Pennsylvania anthracite coal mines, 1891–1900.

[Report cited, p. xxxvii.]

Causes.	Number.	Percentage.
Falls of coal, slate, and roof	1,985	51.9
Mine cars	539	13.9
Explosions of gas	378	9.7
Explosions of powder and blasts	421	10.9
Falling down shafts, slopes, and manways	172	4.4
Crushing at batteries	12	.3
Killed by mules	44	1.1
Suffocation	125	3.2
Miscellaneous causes	186	4.8
Total accidents inside	3,862	88.2
Cars	202	39.1
Machinery	128	24.8
Suffocation	37	7.1
Boiler explosions	29	5.6
Miscellaneous causes	120	23.2
Total accidents outside	516	11.7

Causes of fatal accidents in Illinois coal mines, 1888–1900.

[Illinois Coal Report, 1900, p. 44.]

Causes.	Number.	Percentage.
Black damp	2	0.2
Blasts, explosions, etc	109	12.3
Cages	50	5.6
Coal and other things falling down shaft	6	.6
Falling coal, rock, etc	517	58.6
Falling down shaft	47	5.3
Falling props, etc	10	1.1
Fire damp and gas	31	3.5
Pit cars	62	7.0
Railroad cars	15	1.7
White damp	2	.2
Other causes	31	3.5
Total	882	100.0

It will be seen that by far the most conspicuous cause of fatal accidents, in each case, is the falling of coal and rock, especially from the roof of the working places. Accidents of this sort are more than two-thirds of the total number in and about the Pennsylvania bituminous mines, nearly three-fifths in the Illinois mines, and more than one-half of the total number in and about the anthracite mines. Such accidents are probably to a much less degree preventable by the precautions of the mine owner than are most of the other classes. More adequate timbering in some cases may prevent them, but to a large degree they are unavoidable or are due to the carelessness of miners.

Another very serious cause of accidents is connected with mine cars. The slopes and underground roads in which such cars run are often so narrow that unless proper safety holes are provided at the sides no person can pass the moving and loaded cars. Falling from cars also causes many injuries.

Explosions of gas or "fire damp," which, when they occur, are

likely to kill or injure large numbers of miners, account for about one-tenth of the fatalities in both the anthracite and bituminous mines of Pennsylvania and for about one-twenty-fifth of those in the Illinois mines. Such explosions can be greatly reduced in number by proper ventilation, by proper inspection of the mines by foremen and "fire bosses" from day to day, and by care in the use of safety lamps. A very large proportion of accidents in the anthracite mines is also due to blasting, and the same is true in the Illinois coal mines. These accidents also may be reduced in number by proper precautions in the methods of drilling and blasting. In many cases doubtless they are due to the carelessness of miners, for which the employer and his agents are not responsible, but in other instances proper efforts on the part of the employer, under legal regulation, may do much to prevent injuries.

Similar statistics or even adequate descriptive information regarding accidents in other classes of mines besides coal mines are not available. In most regards iron mines and precious-metal mines are less dangerous than coal mines.

MINE REGULATION AND INSPECTION.

Recognition of the insanitary and dangerous conditions which are likely to prevail in mines has led nearly all States in which coal mines are found to make regulations regarding them and to provide for their inspection. Such laws are in the leading coal-mining States very elaborate, and on the whole fairly satisfactory. Whatever inadequacy exists in such States as Pennsylvania or Illinois is chiefly due to the insufficient number of inspectors and the fact that, despite competitive examination, they are not always thoroughly competent. Some of the other coal-mining States have much less thorough-going legislation, and the inspection is in a number of cases decidedly inadequate.

Laws regulating the conditions of health and safety in other than coal mines are for the most part either wanting or imperfect. In most of the western mining States there is no provision for effective inspection of mines, and very few if any legal regulations regarding the methods and conditions of mining.

Only a very detailed account could set forth all of the means provided, especially in the States having the most advanced legislation, to overcome the dangers of coal mining. In its special Report on Labor Legislation the Commission has set forth fully the existing legislation on this subject, and has published in full the laws of Pennsylvania and Illinois, which may serve for models in those States which have as yet entered into such legislation less extensively.[1] A brief description will suffice here.

[1] Reports Industrial Commission, Vol. V, pp. 230–308.

The coal mine inspection laws aim not only to protect the employee against accident and unhealthy conditions, but, unlike the factory laws, they also protect the property of the mine owners. They provide for the appointment and removal of inspectors, usually upon the basis of a civil-service examination conducted by a board of examiners who are acquainted with the mining industry, including representatives of the employers and the employees, with a mining engineer as a third member. These inspectors are required regularly to visit the mines and call upon the operators for the necessary facilities for inspection, and to call upon the courts to issue orders commanding recalcitrant owners or operators to grant admission to their mines. They make stated reports, and in several States the operators also are required to report on the conditions of their mines. They have special authority to inspect scales and weights and to investigate all complaints made by miners. For violations of law they have power to bring suit before the proper court, or to call the attention of the board of health to any condition which they think needs remedying. In several States the courts are permitted the use of the injunction as a cumulative remedy upon complaint filed by the inspector, and are authorized to restrain the owner from operating the mine until the law has been complied with. Penalties in amounts ranging from $5 to $5,000, together with imprisonment, in several States, are provided for violations of the law. In many States, also, injured persons, or their heirs or personal representatives, have a right of action against the employer in cases of injury growing out of a violation of law. Mine foremen and mine bosses are, by the more advanced laws, required to pass examination, and are prohibited from employment in that capacity unless they have a certificate furnished by the examining board composed of miners, operators, and engineers. The responsibilities and duties of mine bosses or mine managers, in the enforcement of the law, are usually very carefully defined. In the anthracite coal mines of Pennsylvania the miners also are required to possess a certificate based upon examination, and a similar law was enacted in 1897 in Illinois, applicable to bituminous coal miners. Owners or operators are, by practically all the laws, required to make accurate maps showing the different strata and the workings of their mines. Practically all the coal mining States also require that all mines shall have two separate openings which shall reach every vein or stratum of the mine which is being worked, one of which is intended for exit in the case of damage to the main shaft, and is frequently called the "escapement shaft." Some of the laws are very minute in the details prescribed for the equipment of the shafts, and for protection on the top of the shaft through fencing and safety gates. Most of the laws require also adequate safeguards in the hoisting gear and cages, and include provisions for signals. These laws define, with greater or less completeness, the quantity of air which

shall be furnished the miners and the kind of ventilating machinery and apparatus, and require that the fire boss shall keep a careful watch over this apparatus in addition to his other duties. Doors, break-throughs, door-holes, underground roads, safety holes, props and timbers, special protection against fire-damp, safety lamps, fencing of machinery, and of shafts and openings, restrictions on storing gunpowder and blasting material are all specified in the various laws, and in some States are most thoroughly and satisfactorily regulated.

RAILROAD ACCIDENTS.

The operation of railroads is attended with large risk of accident to employees, while passengers are carried with very slight risk. In 1893 (to take a year typical of the period before the passage of the Federal law requiring safety appliances) one passenger out of 183,822 carried received injury, and one out of 1,985,153 was killed; of employees, one out of 28 was injured, one out of 320 was killed; while of the trainmen—those actually engaged in operating trains, enginemen, firemen, conductors, brakemen, etc.—one out of 10 received injury and one out of 115 was killed.

The risk of operating railroads is apparently greater in the United States than in the principal European countries. In testimony before the Industrial Commission the following figures were given, showing the comparative proportions for the United States, Germany, and Austria-Hungary for the year 1890:

1890.	Number of employees to one—		Number of passengers to one—	
	Killed.	Injured.	Killed.	Injured.
United States	306	33	1,721,786	208,064
Germany	750	169	9,262,092	1,805,323
Austria-Hungary	1,067	292	17,109,734	1,291,300

Comparative figures for these and other European countries were given as follows by another witness for the year 1898:

1898.	Number of employees to one—		Number of passengers to one—	
	Killed	Injured.	Killed.	Injured.
United States	447	28	2,267,000	170,141
Germany	996	365	10,700,000	1,700,000
France:				
Private roads	1,000	320	5,000,000	1,000,000
Public roads	1,175	390	12,000,000	4,000,000
Switzerland[1]	1,015	347	8,826,000	710,000
Great Britain	1,070	43	9,000,000	800,000
Belgium	1,360	616	10,000,000	614,000
Austria-Hungary	1,560	200	8,781,000	652,000

[1] For 1897.

analyze the railroad accidents to employees for 1893, 1896, and 1900 by causes, and show the change in proportion accompanying safety legislation.

Turning to the table for 1893, which shows the ratio of accidents to number employed, it is seen that the coupling and uncoupling of cars caused by far the highest ratio of accidents to switchmen, flagmen and watchmen, and the next to the highest ratio for trainmen. In the case of trainmen falling from trains and engines caused a higher death rate, but a lower rate of injury, than coupling. In the case of all other classes of accidents, however, both for trainmen and switchmen, the ratio of killed and injured to the total number employed was so much lower as to place coupling and uncoupling, as a cause of accident, in a class by itself. It is in regard to coupling and uncoupling especially that the law of 1893 might be expected to result in a decrease of accidents.

Making a comparison by years, it is seen that while the number killed and injured compared with the total employees has changed very little, the proportionate number of trainmen killed by coupling and uncoupling was reduced one-half between 1893 and 1896, a slight increase over 1896 being shown for 1900; and the number injured, decreased one-fifth between 1893 and 1896, was reduced one-half between 1893 and 1900. A like change of proportion is to be noted for switchmen, flagmen, etc. Deaths by falling from trains and engines have been materially decreased, but injuries from that cause have remained about the same, contrary to what would be expected from the introduction of hand holds and power brakes. Deaths from accident due to overhead obstructions, remaining about the same in 1896 as in 1893, were reduced about one-third by 1900, and injuries about one-fifth by 1896, being slightly greater, however, in 1900. These changes may probably be referred to provisions in State statutes regarding the height of bridges.

Causes of accidents, etc.—various classes of railroad employees.

1893.[1]

Kind of accident.	Number of trainmen for one—		Number of switchmen, flagmen, and watchmen for one—		Number of other employees for one—		Total employees for one—	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Coupling and uncoupling	579	21	422	20	40,566	2,769	2,018	[illegible]
Falling from trains and engines	354	60	9,209	143	7,443	1,364	1,357	[illegible]
Overhead obstructions	2,722	454	13,349	1,279	161,979	53,993	11,953	1,9[illegible]
Collisions	950	143	5,756	1,071	12,958	3,446	3,415	[illegible]
Derailments	1,382	255	7,675	1,279	88,113	5,102	5,709	1,0[illegible]
Other train accidents	1,996	349	5,116	1,645	24,919	6,055	6,988	1,5[illegible]
At highway crossings	44,909	14,969	3,542	3,069	43,194	40,495	27,300	20,[illegible]
At stations	5,283	445	3,289	1,028	9,419	800	7,466	[illegible]
Other causes	758	47	485	94	1,135	85	967	[illegible]
Total	115	10	150	14	759	68	320	[illegible]

[1] Compiled from Statistics of Railways, Interstate Commerce Commission, 1893, 1896, and 1900.

Causes of accidents, etc.—various classes of railroad employees—Continued.

1896.[1]

Kind of accident.	Number of trainmen for one—		Number of switchmen, flagmen, and watchmen for one—		Number of other employees for one—		Total employees for one—	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Coupling and uncoupling	1,037	25	763	26	44,248	1,973	3,609	98
Falling from trains and engines	437	52	1,054	134	10,868	1,366	1,751	212
Overhead obstructions	2,858	586	22,133	1,841	154,869	2,949	13,121	2,309
Collisions	1,116	206	22,133	1,197	20,649	2,803	4,644	789
Derailments	1,714	314	5,582	1,230	44,248	5,899	7,065	1,254
Other train accidents	4,402	402	14,755	1,581	47,652	11,688	15,597	1,701
At highway crossings	40,719	1,789	4,429	2,213	61,948	12,648	3,443	5,166
At stations	4,790	301	2,951	546	14,406	731	8,985	562
Other causes	958	44	6,324	88	1,576	67	1,306	62
Total	152	10	211	17	1,075	55	444	28

1900.[1]

Coupling and uncoupling	1,017	50	659	50	45,627	1,483	3,609	195
Falling from trains and engines	464	57	1,129	114	10,773	1,758	1,924	230
Overhead obstructions	4,068	513	16,929	1,129	129,277	1,779	18,172	2,334
Collisions	853	153	6,349	584	24,239	492	3,855	646
Derailments	1,226	309	16,929	940	20,412	884	5,166	1,160
Other train accidents	2,941	336	16,929	705	77,567	929	13,047	1,219
At highway crossings	191,198	15,933	5,644	3,907	77,567	14,635	50,883	1,920
At stations	5,168	268	2,988	843	13,147	302	9,006	396
Other causes	719	28	474	58	1,216	33	1,006	43
Total	187	11	187	17	879	40	399	26

[1] Compiled from Statistics of Railways, Interstate Commerce Commission, 1893, 1896, and 1900.

On the whole it may be claimed, then, that the Federal law of 1893 has had a decided effect in decreasing accident in the departments to which it applies. Several witnesses have testified to this effect before the Industrial Commission.

State legislation, modeled after the Federal law, as in Massachusetts, supplementing that law so as to cover traffic within the State, would no doubt do much to reduce the accident rate. This also has been urged before the Industrial Commission both by a representative of the Interstate Commerce Commission and a representative of railway labor.

Further Federal legislation also might be enacted to reach other causes of accident. Among these causes are long work days, as well as those mentioned in the report of the Interstate Commerce Commission above quoted. Legislation reducing hours of employment, fixing a standard of proficiency for employees, regulating amount of freight and passenger traffic to be handled per man, and providing inspection of cars in other particulars besides those prescribed in the law of 1893, to guarantee their safety in use, would improve conditions.

CHILD LABOR.

Factory and mine inspectors have no more important duty than that of enforcing the laws restricting the labor of children. According to the census of 1890, 11.21 per cent of the males and 5.85 per cent of the

females between the ages of 10 and 15 were engaged in gainful occupations, while 2.84 per cent of the operatives and pieceworkers in manufacturing establishments were boys under 16 and girls under 15. In some States the enforcement of child-labor laws may have reduced the number of children employed since 1890; but the figures for occupations by the census of 1900 are not yet published, and it is impossible from the statistics of manufactures available, to make any accurate comparison of the number of children employed at the beginning and end of the decade. At the census of 1890 the manufactures schedule called for the number of males above 16, females above 15, and children. In 1900 the corresponding schedule called for men 16 years and over, women 16 years and over, and children under 16 years. The number of children as reported by the census, therefore, includes for 1890 boys under 16 and girls under 15, while for 1900 the figures include both boys and girls up to the age of 16. Other things remaining equal, this would lead to an increase in the apparent number of children employed. It is impossible to say how much this increase should be, but it is likely that there are more girls between 15 and 16 years of age at work in manufacturing establishments than at any other age under 16. On the other hand, the form in which the question was asked in 1890 may have led to some misapprehension as to its meaning. The expression, "males above 16," for example, may have been interpreted in some cases to mean males 17 years and over; and "females above 15 years" may have been interpreted to mean females 16 years and over. If so, this would tend to restore the comparability of the two censuses; but it is not likely that this would even approximately counterbalance the effect of the difference of an entire year in the age classification of females.

If the proportion of children under 16 had remained constant during the decade, therefore, the manufactures census of 1900 should show an increase in the proportion of children employed; but so far as figures are available at this writing, the reverse is the case. Of 21 States for which the manufacturing statistics are available, and in which there were more than 100 children employed in manufacturing establishments in 1900, the census shows a diminution in the percentage of children during the decade in all but 7 cases, as shown in the following table. The actual diminution may be assumed to have been somewhat greater than these figures indicate, for the reasons explained above. The States in which the proportion of children increased are Georgia, Alabama, Louisiana, South Dakota, Montana, and Oregon, while in Iowa the percentage remained the same. Louisiana is the only one of these States having an age limit for child labor in factories. This absence of restrictive legislation, together with the recent development of cotton manufacture in the South and of industry in general in the West, explains the increase in these States.

Total number of wage earners and number of children employed in manufacturing in certain States, 1890 and 1900.

States.	Total number of wage earners.		Number of children.		Percentage of children.	
	1900.	1890.	1900.	1890.	1900.	1890.
Maine	74,816	70,374	2,202	2,442	2.9	3.5
Vermont	29,455	22,119	263	389	.9	1.8
New Hampshire	70,419	60,111	1,651	1,669	2.4	2.8
Rhode Island	96,528	81,111	5,036	5,825	5.2	7.3
Connecticut	176,694	140,514	3,479	3,085	2	2.2
Delaware	22,208	20,479	859	1,370	3.9	6.7
District of Columbia	24,698	20,406	116	133	.5	.7
West Virginia	33,085	19,340	840	811	2.5	4.2
Florida	37,094	13,119	374	268	1	2
Georgia	88,842	52,298	6,373	3,521	7.6	6.8
Alabama	52,902	31,137	3,474	1,425	6.6	4.6
Mississippi	26,418	14,465	1,049	909	4	6.3
Louisiana	42,210	28,377	1,231	612	2.9	2.2
Arkansas	26,501	14,143	643	403	2.5	2.8
Iowa	58,558	51,037	1,888	1,644	3.2	3.2
Kansas	35,193	28,237	860	881	2.4	3.1
Montana	10,117	2,386	112	11	1.1	.5
South Dakota	3,121	2,011	114	36	3.6	1.8
Colorado	24,725	15,016	248	272	1	1.9
Utah	6,615	4,349	218	207	3.3	4.8
Oregon	17,236	16,760	296	200	1.7	1.2

Child labor is employed most extensively in textile factories. A recent careful computation has indicated that fully one-third of the cotton-factory operatives in a certain town of Georgia are under 14 years of age. Children are employed in considerable numbers in the manufacture of clothing, especially in sweat shops, and also in glass factories, as well as in a variety of other employments, such as the making of artificial flowers, feathers, neckties, cigars, paper and wooden boxes, picture frames, furniture, boots and shoes. In Chicago numbers of children are employed in the stock yards, in the packing of meat. In the Southern cotton mills, 12 appears to be the age at which children are ordinarily expected to begin work; but some of the mills employ children under that age, sometimes as young as 9, 8, and even 7 years. In the sweat shops of Northern cities, also, very young children are often employed.

Probably the most serious and far-reaching effect of child labor is the prevention of normal development, physical and mental. Besides being deprived of the schooling they would otherwise get, children are injured by confinement and sometimes worn out by overwork. In other cases the work is demoralizing because it does not call out the best faculties of the children, or leaves them idle part of the time.

It is said that work in mercantile establishments is harder physically and mentally than work in factories, and is of less moral value in developing the child; but it is diminishing somewhat through the introduction of patent cash systems.

It has been found that children are much more liable to accidents in factories than are adults. Thus, a recent report of the Minnesota bureau of labor shows that boys under 16 have twice as great a probability of accidents as adults, while girls under 16 have 33 times as

great a probability of being hurt as women over 16. Practically all of the accidents to female operatives occur to the young girls. It is hardly to be expected that a young girl or boy will take the necessary care to avoid accidents in a factory. It has also been found that overwork and strain of the muscular and nervous systems are much more serious in children than in adults, and that children are also more susceptible to the poisons and injurious dusts arising in certain processes than are grown persons. Thus, children engaged in stripping tobacco have been found to be afflicted with nicotine poisoning and inflamed eyes.

Besides the deplorable physical, mental, and moral effects of child labor upon the children, certain widespread economic effects of their employment must be considered. The most serious of these is the displacement of adults by children. Child labor must be counted as one of the important causes of unemployment among adults. For some particular processes young persons are preferred to adults because of greater nimbleness or manual dexterity; but the principal cause which leads to their employment in the place of grown persons is probably the lower wage at which they can be hired.

The competition of children with adults in the labor market can hardly fail to have the effect of reducing the wages paid to the latter; and it has been found by actual investigations that, where child labor is most common, the contribution of the children is partly at least offset by a corresponding loss in the earnings of the adults. In Connecticut, for example, it has been shown that in the textile mills, where women and children work, the earnings of the entire family are no greater than in industries in the same State where only men are employed.

The laws of the several States respecting child labor prohibit the employment of children under a certain age, usually 12 or 14, at least in mines or factories, or both, and sometimes also in mercantile establishments, laundries, bakeshops, printing offices, etc., and often limit the hours of labor of young persons up to the age of 16, 18, or (especially in the case of young women) 21.

The only objection to the restriction of child labor which need be seriously considered is the argument that in some cases the labor of children is essential to the support of the family where the natural breadwinner is dead or disabled. Investigations in certain States have shown that this is true only in a small minority of the cases in which children are at work; but even when the labor of children is absolutely necessary to the support of a family, it is a question to what extent the welfare and development of the children should be sacrificed to the physical necessities of themselves and the other members of their families. In the case of very young children, at least, it would be better for the State to pay for their subsistence, as it does in the

case of wholly dependent children, in institutions or placed out as boarders in private families, than to allow their physical and mental development to be stunted by too early employment. On the other hand, where a child is, at the death of his father, within a few months of the age at which he may properly be allowed to go to work, and is reasonably well advanced in his physical and intellectual development, it is better that he should be permitted to leave school and become a breadwinner than that the family should be obliged to depend upon charity or a bounty from the State. The possibility that a child-labor law may work a hardship in some cases is no valid argument against the prevention of child labor in general, for special cases can be provided for in the law itself. Thus, in Wisconsin a child may be employed in a factory under the age of 14 upon the permit of the county judge, who, in granting such a permit, is directed to consider the child's moral and physical condition, the state of his education, the necessities of the family, etc. In Minnesota a similar discretion is given to the school board in the case of children under 16.

One of the greatest difficulties met with in the enforcement of child-labor laws is the tendency of parents to overstate the ages of their children in order to secure the benefit of their wages. Parents will sometimes perjure themselves for the sake of putting their children to work, and cases are found in which they do not accurately know their children's ages. In a few States the statements of parents have been replaced by certificates issued by responsible public authorities, as the health officers or school board. The Michigan law, which has been found quite effective, requires all affidavits for use in Detroit to be made before the factory inspector.

Again, inspectors are sometimes unable to prove that the children they find in factories or workshops are actually employed there. The Illinois inspectors, on entering a sweat shop or cigar factory, have often seen a boy or girl drop into a chair, put on a cap or shawl, and pose as a visitor, the pretense being supported by the boss and the other employees.

That the existing child-labor laws have had a beneficial effect is shown by the diminished number of children employed where such laws are in force, in contrast with the increasing proportion of children employed where there are no such laws. But the experience of factory inspectors in leading manufacturing States has shown the need of more comprehensive and efficient laws for the protection of children. Besides the difficulties already mentioned, many States have an insufficient number of inspectors to enforce the law properly. The existing laws are also inadequate in that they do not apply to such street occupations as selling papers and blacking boots, so that they may result in turning children from the factories into the streets. In many cases, also, the restrictions apply only to certain kinds of establishments—e. g., factories, but not stores and laundries.

EDUCATIONAL REQUIREMENTS.

It is impossible to treat of restrictions upon child labor without considering the laws regarding compulsory education at certain ages, since these laws, if enforced, also prevent the labor of children, at least during part of the year. In most of the States having compulsory education laws, school attendance is required until a later age than that at which factory labor is permitted, so that in order to comply with the law, it is necessary for children, who go to work as early as the law permits, to stay out of the factory during a part of the year and attend school. Unfortunately, most of the States having compulsory attendance laws require attendance during only a part of the year, and in many cases the period of attendance is only 12 weeks; in Kentucky it is only 8 weeks. The brevity of the required period probably results from the existence in many States of rural schools having very short terms, so that it has seemed necessary to make the period of compulsory attendance short. This explanation seems to be borne out by recent amendments to the laws of Washington and Michigan, which make the period of compulsory attendance much longer in cities than elsewhere, and by a similar but less radical distinction between city and country in Ohio. A few States have solved the difficulty in a still more satisfactory way by requiring school attendance during the entire session, as in Massachusetts, Connecticut, Pennsylvania, Minnesota, and (for children under 12) New York; or for two-thirds of the term, as in California and Nebraska. The requirement of such a period of attendance as 12 or 16 weeks is not only inadequate to insure children a reasonable education before the age at which they are permitted to leave school and begin work, but has sometimes been found to work badly in practice, because children found out of school can not be compelled to attend at that particular time, and thus the law may be evaded altogether.

Many States which absolutely prohibit child labor under a certain age have educational requirements in the case of working-children, during the first two or three years in which labor is permitted. Thus it is provided that children under this higher age may not be employed in factories while the schools are in session, or unless they can read and write, or have attended school for the prescribed time during the past year, or attend evening school. On the other hand, the compulsory attendance laws are sometimes modified by reference to the employment or nonemployment of children. Thus, in Rhode Island, children between 7 and 15 must attend school when unemployed, even if they have exceeded the 80-day minimum period prescribed by the law. In New York unemployed children are required to attend school until 16. Massachusetts and Ohio require school attendance until 16 if children are wandering about public places without lawful occupation, but otherwise only until 14; while in Connecti-

cut, also, attendance is not required between 14 and 16 if the child is lawfully employed and not enrolled; and in Pennsylvania the compulsory education law does not apply to children over 13 who can read and write English intelligently and are regularly engaged in useful service. In Wyoming school attendance may be enforced up to the age of 21 in the case of youths living idly, loitering about public thoroughfares, and spending their time in an idle and dissolute manner.

The following table shows the ages under which labor in factories and mines is prohibited in the various States, and the periods of compulsory school attendance:

Summary of child labor and compulsory education laws in force October, 1901.

States.	Age under which labor in factories is prohibited.	Age under which labor in mines is prohibited.	Age for compulsory school attendance.	Annual period of compulsory school attendance.
Maine	12	.....	7–14	16 weeks.
New Hampshire	12	.....	8–16	12 weeks.
Vermont	10	.....	8–15	28 weeks.
Massachusetts	14	.....	7–14	Full term.
Rhode Island	12	.....	7–15	80 days.
Connecticut	14	.....	7–16	Full term.
New York	14	.....	8–16	8 to 12, full term.
New Jersey	14, 12	12	7–12	20 weeks.
Pennsylvania	13	14	8–16	Entire session.
Maryland	12	.....	.....	
District of Columbia	.....	.....	8–14	12 weeks.
West Virginia	12	12	8–14	16 weeks.
Kentucky	.....	.....	7–14	8 weeks.
Tennessee	14	14	.....	
Alabama	.....	10	.....	
Louisiana	14, 12	.....	.....	
Ohio	13	15	8–14	20, 16 weeks.
Indiana	14	14, 12	7–14	12 weeks.
Illinois	14	.....	7–14	16 weeks.
Michigan	14	.....	8–15	4 months.
Wisconsin	14, 12	.....	7–14	12 weeks.
Iowa	.....	12	.....	
Minnesota	14	14	8–16	Entire session.
Missouri	14	.....	.....	
North Dakota	12	.....	8–14	12 weeks.
South Dakota	.....	14	8–14	12 weeks.
Nebraska	12, 10	12, 10	7–14	Two-thirds term.
Kansas	.....	12, 16	8–14	12 weeks.
Arkansas	.....	14	.....	
Montana	.....	14	8–14	12 weeks.
Wyoming	.....	14	6–21	12 weeks.
Colorado	14	12, 14, 16	8–14	20 weeks.
New Mexico	.....	.....	8–16	12 weeks.
Arizona	.....	.....	8–14	12 weeks.
Utah	.....	14	8–14	20 weeks.
Nevada	.....	.....	8–14	16 weeks.
Idaho	.....	14	8–14	12 weeks.
Washington	.....	14	7–15	12 weeks.
Oregon	.....	.....	8–14	12 weeks.
California	12	.....	8–14	Two-thirds term.

In several States, as shown by the above table, the age for compulsory school attendance corresponds to the age under which child labor is prohibited, and there is thus at least an opportunity for cooperation between the officials having charge of the enforcement of the two laws. Most of the States which prohibit child labor in either factories or mines have also compulsory education laws; but Maryland, Tennessee, Alabama, Louisiana, Arkansas, Missouri, and Iowa are exceptions. On the other hand, there are a few compulsory education laws

which are not supplemented by child-labor laws. This is the case in Kentucky, New Mexico, Nevada, Oregon, Arizona, and the District of Columbia. In the District of Columbia the compulsory attendance law is not enforced because the duty of enforcing it is not assigned to any official. If Congress were to enact a law for preventing child labor in workshops and mercantile establishments in the District, it might be possible to combine the functions of a truant officer with those of the official having charge of the enforcement of the restrictions on child labor. In general, child-labor laws and compulsory education laws should be brought into the closest harmony, and the natural result will be that the work of factory inspectors and of truant officers will supplement each other.

While the need of some restriction upon child labor is generally admitted, there is some difference of opinion as to the age under which employment should be prohibited. Among the witnesses who have testified on this subject before the Commission, there is one who considers 13 years a sufficiently high limit if there is also a physical examination as to the child's fitness for work, arguing that children often learn trades more readily than older persons. A number of witnesses, however, favor the entire prohibition of child labor up to the age of 16; and this proposal has the support of the Knights of Labor. A higher age limit than those at present in force is considered especially desirable in connection with the increased employment of manual training in the schools and the extension of educational facilities in general.

Uniform, or at least similar, legislation in the various States is especially desirable in the case of laws restricting child labor, because in so far as the employment of children is a real economy, it gives manufacturers in the States where it is permitted an unfair advantage over those in the States having child-labor laws. The lack of such laws in most of the Southern States must be recognized as an important cause of the check to the growth of coarse cotton manufacturing in New England. It would be too much to expect the Southern States to prohibit child labor at once under the age of 14, as is done in Massachusetts and Connecticut, at least until the remaining New England States have set an equally high standard. It is claimed that children reach a given stage of maturity at least a year earlier in South Carolina and Georgia than in Massachusetts, and other conditions also differ greatly in the two regions. Perhaps the most that can be hoped for at present is the prohibition of child labor under the age of 12 in Southern mills; though Tennessee, which has had such a law for several years, has now raised the limit to 14, and the same development may be expected in other Southern States after the principle of legal restriction is once thoroughly established. If the limit is put as low as 12, however, such restrictions should be placed upon the employ-

ment of children during the next three or four years as will provide against their being overworked and insure them at least the rudiments of an education. In view of the nearness of the raw material, the low cost of labor, the abundant water power, and other advantages possessed by Southern mills, the Southern States can well afford to impose such restrictions as are here suggested; indeed, it would be a short-sighted policy, even from a purely industrial standpoint, for them to permit the health of the rising generation to be broken down by too early factory labor.

EMPLOYMENT OF WOMEN.

AMOUNT AND ECONOMIC EFFECTS.

The employment of women in large and constantly increasing numbers in wage-paid occupations has given rise to a considerable amount of discussion. Unfortunately, it is impossible to show the changes in this direction since 1890, as the figures of the census of 1900 are not yet available. Comparison between the figures given in the census report of 1890 and those of previous census reports serve, however, to show the general trend, and for that purpose may be given brief attention.

The census records of 1850 and 1860 did not report separately the number of women engaged in gainful occupations, but this was done in the census of 1870 and has been done in succeeding census reports. In the following table is given the total female population of the United States of the age of 10 years and over for the years 1870, 1880, and 1890, together with the number and percentage engaged in gainful occupations for each of those years:

Females 10 years of age and over.

Year.	Total population.	Engaged in gainful occupations.	
		Number.	Per cent.
1870	13,970,079	1,836,288	13.14
1880	18,025,627	2,647,157	14.69
1890	23,060,900	3,914,571	16.97

From this table it appears that the number of women engaged in gainful occupations in 1880 had increased materially, both absolutely and relatively, over the number for 1870, and that there was a much greater absolute and relative increase in 1890 as compared with 1880.

Later figures bearing upon this subject which are obtainable from other sources are not such as to afford an entirely satisfactory basis of comparison. So far, however, as any conclusions may be drawn from them, they serve to show that the general trend continues the

same. In the State of Massachusetts a census was taken in 1895, and some comparison may be made between the number and percentage of females of the age of 10 years and over engaged in gainful occupations in that State in that year and the number and percentage so engaged in the State in 1890. The Massachusetts census followed a somewhat different method, however, from that followed by the United States census. The United States census reports have taken no account whatever of the women who perform the labor of their own households, whereas the Massachusetts census included among the women engaged in gainful or productive occupations those engaged in labor in their own homes, classing them, together with domestic employees, among those engaged in domestic service. In order to make a comparison, therefore, between the situation in that State in 1890 and the situation in 1895, it is necessary to deduct from the total number reported in each case those classified as engaged in domestic service. Doing this, the following results are obtained:

Females 10 years of age and over, Massachusetts.

Year.	Total population.	Engaged in gainful occupations, other than domestic service.	
		Number.	Per cent
1890	962,544	177,095	18.39
1895	1,056,465	213,361	20.20

It appears, therefore, from the latest statistics obtainable, that the proportion of women engaged in wage-paid labor is, so far as Massachusetts is concerned at least, still on the increase.

The complaint is sometimes made that the employment of women means the displacement of men, and on this ground the proposition has been advanced that special restrictions be put upon the labor of women. The question as to whether the fact that women are displacing men would of itself justify the placing of restrictions upon their labor, or whether this could constitutionally be done, since the right to engage in labor is a right belonging to every citizen, whether man or woman, may for the time being be laid aside, for the accuracy of the statement itself is seriously questioned. Mr. Carroll D. Wright holds that women are in a large measure taking the place of children, and are not largely displacing men, while in some industries men are displacing women.[1] Others claim also that the facts of history show that in the industrial readjustment which has taken place during the last half century men have very largely displaced women in occupations previously monopolized by women.[2] Before the development

[1] Reports Industrial Commission, Vol. VII, p. 18.
[2] Reports Industrial Commission, Vol. VII, pp. 64, 65.

of the factory system, much of the work now done in factories was performed in the home and by women. This is especially true of spinning, carding, weaving, and of all labor entering into the manufacture of textiles. While it is true that large numbers of women are employed in textile mills, it is true also that large numbers of men are employed in those mills, and are thus employed in the performance of labor formerly performed by women. What is true of textile manufacture is in a less degree true of many other occupations, as laundry work, the canning of fruit, the making of butter and cheese, etc.

The specialization of labor which has taken work from the home to the factory has brought about a readjustment of the labor of both men and women. The transfer of the work and the substitution of the labor of men for that of women has deprived many women of employment which they formerly found within the home, and has forced them to look outside and to find occupation wherever there may be opportunity. Many of them have found employment directly in the occupations taken from home to factory, but there has not been room for all in these occupations, inasmuch as much of the labor is now being performed by men, and consequently many others have been forced to look for employment in occupations from which there have been withdrawn the men who are now employed in occupations formerly monopolized by women. Again, industrial changes have created many new occupations, such as stenography and typewriting, in which large numbers of women have found employment, and in which there has been no displacement of either men or women.

It can not be said, therefore, that women are displacing men in the sense that more women and fewer men are being actually employed in labor. There are changes in both directions. Men are doing work formerly done by women; women are doing work formerly done by men. It is true that the census figures show a constantly increasing proportion of women engaged in gainful occupations, but it is to be remembered that, as already pointed out, "gainful occupations," as that term is interpreted by the United States Census Office, refers only to wage-paid occupations, the census taking cognizance only of women engaged in occupations to which an actual and definite money payment is attached and taking no account whatever of women, either wives or daughters, who perform the labor of their own households. If, therefore, labor which 10 years ago was done within the home by the wife or daughter is now done outside the home, those performing it to-day are classed among those engaged in "gainful occupations," whereas those who performed the work 10 years ago were not included in that class. It becomes plain, therefore, inasmuch as much of the labor which was formerly done within the home by women is now done in factories by men, that, though exactly the same relative number of women were to-day engaged in the performance of labor of this class as were for-

merly so engaged, nevertheless the percentage of women engaged in "gainful occupations," as the term is used in the census reports, would be largely increased. The census records in respect to the labor of women, therefore, read in the light of collateral facts, are a history of industrial readjustment rather than a record of the relative extent of the employment of women, and it is impossible to say, so far as the census figures are concerned, whether a larger proportion of women are actively engaged in labor to-day than formerly or not. The one fact which is clear is that factory or shop work is displacing home work, and that this readjustment of industrial conditions is leading to the employment of women outside the home in constantly increasing numbers.

In England and Wales a situation somewhat different from that in this country seems to exist. In those countries the relative number of women engaged in gainful occupations ("gainful occupations" being used in the same sense in which the words are used in the United States census) is considerably greater than in this country, while the rate of increase appears to be considerably less. The following table is compiled from figures given in a special report made to Parliament by the labor department of the Board of Trade in 1894:

Females 10 years of age and over, England and Wales.

Year.	Total population.	Per cent engaged in gainful occupations.
1881	9,992,513	34.05
1891	11,461,890	34.42

From this table it appears that the percentage of females of the age of 10 years and over engaged in gainful occupations in England and Wales, in 1891, was only .37 of 1 per cent greater than the percentage so engaged in 1881, as compared with an increase of 2.28 in the percentage of females of the age of 10 years and over engaged in gainful occupations in this country in 1890 over the percentage of those so engaged in 1880.

At the same time the percentage of females actually engaged in gainful occupations was 2.32 times as great in England and Wales in 1881 as the percentage in this country in 1880, and 2.03 times as great in 1891 as in this country in 1890.

Whether the higher percentage of women engaged in gainful occupations in England and Wales and the lower rate of increase are due to greater economic pressure, which has led to a decrease in the number of women not actually engaged in labor, or whether it represents merely a difference in the adjustment of industrial conditions, can not be determined, inasmuch as neither in this country nor in England and Wales is any distinction made between women who act-

ually perform the labor of their own households and those who may properly be classed as having no occupation. The method of computation makes it impossible to determine in either case how many women are properly to be classed as nonworkers.

WAGES OF WOMEN.

One of the greatest evils connected with the labor of women is the low wages which they receive. An investigation which was made in 1888 by the United States Department of Labor into the wages of working women employed in 22 large cities disclosed the following results:

Wages of women in leading cities.

Cities.	Average weekly wages.	Cities.	Average weekly wages.	Cities.	Average weekly wages.
Atlanta	$4.05	Cleveland	$4.63	Richmond	$3.93
Baltimore	4.18	Indianapolis	4.67	St. Louis	5.19
Boston	5.64	Louisville	4.51	St. Paul	6.02
Brooklyn	5.76	Newark	5.10	San Francisco	6.91
Buffalo	4.27	New Orleans	4.31	San Jose	6.11
Charleston	4.22	New York	5.85	Savannah	4.99
Chicago	5.74	Philadelphia	5.34		
Cincinnati	4.59	Providence	5.51		

It is manifest from the figures given that the amount of earnings in many cases is less than the actual cost of the necessities of life. The existence of such a state of affairs must inevitably lead in many cases to the adoption of a life of immorality and, in fact, there is no doubt that the low rate of wages paid to women is one of the most frequent causes of prostitution. The fact that the great mass of working women maintain their virtue in spite of low wages and dangerous environment is highly creditable to them. The lifting of the wage standard would be not only a step toward industrial betterment, but it would be a powerful moral agency.

It seems to be unanimously admitted that, barring a few exceptional cases, the wages paid to women are lower than the wages paid to men for similar work. The existence of such a state of affairs is a disadvantage to both men and women; a disadvantage to men because the competition of women in present circumstances tends to reduce the wages of men, and a disadvantage to women because it results in their not receiving fair compensation for labor performed. Labor organizations, in order to keep up the standard of wages, have been inclined to demand "equal pay for equal work." The adoption of this principle, it is believed by some, would result in lessening the number of women employed in wage-paid occupations, on the ground that most employers would prefer to hire men unless they could get women at lower wages. While this might be the result in some cases, it would not be the invariable result, for there are certain occupa-

tions in which employers prefer the labor of women to that of men. Furthermore, it is occasionally found that, even in occupations where there can be no reason for such preference, a considerable number of women find employment at the same rate of wages as that paid to men. According to Mr. Shaffer, president of the Amalgamated Association of Iron and Steel Workers, there are fully 800 women members in the Protective Tin Workers' Association, who are employed in the tin mills and are paid the same wages per piece as the men workers. But, in any case, whatever the result, the manifest fairness of the proposition that there should be equal pay for equal work must be its own justification. Its successful adoption would not only free men from the evil of lower wages by reason of the competition of women, but it would fix a standard of labor to which both men and women would be obliged to conform, and would bring about the fixing of wages on the only fair basis possible, viz, that of the quality of the work performed. If women should fail to come up to the standard set, they should not receive the wages attached to that standard; if, on the other hand, they should come up to the standard set, they should receive just compensation.

Furthermore, it can not be overlooked that it would be impossible to withdraw from industry any such number of laborers as is represented by the women employees. In 1890, as already stated, the total number of females of the age of 10 years and over employed in wage-paid occupations was 3,914,571, while the census of 1900 will undoubtedly disclose a considerable increase over that number. In view of this fact, it would seem that if it were possible to have concerted action looking toward the adoption of the principle of "equal pay for equal work," success must of necessity follow. Such concerted action must come from both working men and working women, and its chief instrument must be the labor organization.

HOURS OF LABOR.

As part of the general movement toward the lessening of hours of labor, there has been considerable legislation placing restrictions on the hours of labor of adult women of full age, as well as on those of minors. Two influences have led to this—one, and by far the more influential, the desire to protect the well-being of the women themselves; the other, the hope that in this way a step toward the lessening of hours of labor generally may be taken, as it has been found that the hours of labor for women workers have in many cases fixed the hours of labor for the entire establishments in which they are employed.

Since the decision in the Utah case (Holden *v.* Hardy, 169 U. S., 366), referred to above, there has been no question of the constitutionality of statutes limiting the hours of labor in particular industries for all persons. In putting restrictions upon hours of labor for adult

women other than those placed upon the hours of other adult citizens, however, a new constitutional question is raised, especially in view of the growing tendency of the courts to depart from their former attitude of regarding women as not fully sui juris.

In only two cases has the question of the constitutionality of such statutes come up for judicial determination, viz, in Massachusetts, in 1874 (Commonwealth *v.* Hamilton Manufacturing Co., 120 Mass., 383), and in Illinois, in 1895 (Ritchie *v.* People, 155 Illinois, 98). In the Massachusetts case the statute was upheld, but the constitutionality of making discriminations between men and women in this regard was not specifically discussed by the court, and the language of the decision was broad enough to apply to all persons, both men and women, the court saying:

> It [the law] does not forbid any person, firm, or corporation from employing as many persons or as much labor as such person, firm, or corporation may desire; nor does it forbid any person to work as many hours a day or week as he chooses. It merely provides that in an employment which the legislature has ever deemed to some extent dangerous to health, no person should be engaged in labor more than ten hours a day, or sixty hours in a week.

In the Illinois case, on the other hand, the decision turned in part on the constitutionality of discriminating between men and women, and the statute placing restrictions upon the hours of labor for women which were not imposed upon the hours for men was held to be unconstitutional under Article II, section 2, of the State constitution, which provides that "No person shall be deprived of life, liberty, or property without due process of law," and unconstitutional also as a violation of the fourteenth amendment of the United States Constitution. The court said, referring to the fourteenth amendment:

> A woman is both a citizen and a person, within the meaning of this section * * * The law accords to her, as to every other citizen, the natural right to gain a livelihood by intelligence, honesty, and industry in the arts, the sciences, the professions, or other vocations. Before the law, her right to a choice of vocations can not be said to be denied or abridged on account of sex * * * It is not the nature of the things done, but the sex of the persons doing them which is made the basis of the claim that the act is a measure for the promotion of the public health. It is sought to sustain the act as an exercise of the police power upon the alleged ground that it is designed to protect woman on account of her sex and physique. It will not be denied that woman is entitled to the same rights under the Constitution to make contracts with reference to her labor as are secured thereby to men.

The Massachusetts case is referred to and held to be "not in line with the current of authority."

In view of the meagerness of court decisions on the subject, it is impossible to predict what the decisions on this point would be in the different States. The legislatures in a considerable number of States have, however, acted on the assumption that such laws are constitutional, and fourteen States in all have enacted statutes placing

specific restrictions on the hours of labor for women of full age which do not apply to male adults. In most cases the hours are fixed at ten hours a day and sixty hours a week, though in Massachusetts fifty-eight hours a week, in New Jersey fifty-five hours a week, and in Wisconsin eight hours a day are fixed as the limit. In Pennsylvania the hours are twelve hours a day and sixty hours a week. The fact that with the exception of the two cases cited, the one in Massachusetts and the other in Illinois, the constitutionality of these restrictive statutes has not been questioned, is evidence perhaps that the actual working of the laws is considered satisfactory.

EXCLUSION FROM PARTICULAR EMPLOYMENTS.

In some States statutes have been enacted prohibiting the employment of women in certain occupations. In Alabama, Arkansas, Pennsylvania, and Wyoming, women are prohibited from working in any mines, and in Colorado, Indiana, Washington, and West Virginia, from working in coal mines. In certain other States statutes have been enacted prohibiting the employment of women in places where intoxicating liquor is sold at retail. There has been more question of the constitutionality of statutes of this character than there has been of those restricting the hours of labor for women, and the courts have differed in their holdings.

In California a statute forbidding the employment of women after certain hours in places where intoxicating liquor was sold was held unconstitutional under a clause of the California constitution providing that no person should on account of sex be disqualified from entering upon or pursuing any lawful business, vocation, or profession.[1] In Ohio and in Washington, on the other hand, the constitutionality of similar statutes has been upheld.[2] In both of these cases the constitutionality of the statute was questioned, not by the employee, but by the employer, and the courts rested their decisions upon the broad general grounds of the right of the State under its police power to regulate places where liquors are sold rather than specifically upon the constitutionality of the discrimination against women.

In this latter fact may perhaps be found a suggestion of the considerations which will influence the courts in their holdings in regard to the constitutionality of such statutes. If it appears that the fundamental purpose of the statute is the promotion of the morality of the community, and that the exclusion of women from certain occupations altogether, and from employment in certain other occupations under certain conditions, is but an incident to the accomplishment of that purpose, the probabilities are that the statute will be upheld; while,

[1] In re Mary Maguire, 57 Cal., 604.

[2] Bergman *v.* Cleveland, 39 Ohio State, 651; State *v.* Considine, 16 Wash., 358.

on the other hand, if the primary object of the statute appears to be to place restrictions on the employment of women, either as a means of protecting them against themselves or as a benefit to some other class in the community, the probabilities are that the statute will be held unconstitutional. Tiedeman, in his work on State and Federal Control of Persons and Property, section 86, says:

> In so far as the employment of a certain class in a particular occupation may threaten or inflict damage upon the public or upon third persons, there can be no doubt as to the constitutionality of any statute which prohibits their prosecution of that trade, but it is questionable, except in the case of minors, whether the prohibition can rest upon the claim that the employment will prove hurtful to them. * * * There can be no more justification in the prohibition of the prosecution of certain callings by women because the employment will prove hurtful to themselves than for the State to prohibit men from working in the manufacture of white lead because they are apt to contract lead poisoning, or to prohibit occupation in certain parts of iron smelting works because the lives of the men so engaged are materially shortened.

The distinctions here pointed out, it would seem, might well be taken under consideration by legislatures in the enactment of legislation bearing upon the subject.

EMPLOYMENT OF MARRIED WOMEN.

There has been some suggestion of the making of special regulations concerning the employment of married women. It is exceedingly doubtful if the constitutionality of any statute discriminating against married women, as such, could be maintained, though legislation relating to special conditions could be properly enacted. European countries generally forbid the employment of women in factories within four weeks after childbirth, and in Switzerland it is forbidden to employ pregnant women in certain occupations.

Regulations such as these might very properly be made, yet the fact can not be overlooked that such restrictions would have little effect in curing the evils growing out of severe labor on the part of women under such circumstances, for the vast majority of married women who overwork under such conditions are employed in their own homes. The employment of married women outside the home has not attained very large proportions in this country, and only a very small percentage are engaged in any form of labor outside their homes, while a smaller percentage still are employed in workshops or factories.

The census of 1890 showed that of the total number of married women in the United States, only 4.63 per cent were employed in "gainful occupations." In this number were included all married women who were separated from their husbands without being actually divorced, so that the number of married women living with their husbands and employed outside the home was slightly less, even, than 4.63 per cent of the whole number of married women in the country. Of this small percentage engaged in gainful occupations, only 21.29

per cent were engaged in manufacturing and mechanical industries; 29.69 per cent were engaged in agriculture, fisheries, or mining; 4.30 per cent were engaged in professional service; 3.28 per cent in trade and transportation, and 41.54 per cent in domestic or personal service. Effective legislative restriction on the labor of those engaged in domestic and personal service would manifestly be impossible, and as only 2.70 per cent of the married women of the country are engagd in labor other than domestic service, it is plain that industrial legislation of the very widest scope possible would touch only to a very slight degree the labor of married women. The questions involved, therefore, must be considered as almost purely social, and consequently outside the scope of the investigations of the Industrial Commission.

COMPENSATION FOR ACCIDENTS—EMPLOYER'S LIABILITY.

Prevention of accidents, rather than compensation to the workingman after they occur, is the end desired not simply by the community in general, to avoid the loss of productive power caused by accidents, but by the workingmen themselves. The English trade unions in their movement for better liability laws made their demand for "immunity, not compensation." In the United States the same demand is made; as, for instance, the grand master of the Brotherhood of Locomotive Firemen, testifying before the Industrial Commission, says that "we would prefer to prevent the injuries rather than to secure indemnity therefor."

For this reason the introduction of preventive methods in industries, the enactment of legislation providing for them, and the proper administration of such laws, as previously discussed, are of primary importance.

Up to the present time, however, no complete system of prevention has been reached. In all industries there is still found a greater or smaller residuum of loss by accident to workingmen, for which most countries have provided, by laws making the employer liable to the workingman for damages in a more or less extended set of cases. Such laws may also take their place as part of a preventive system, by constraining employers, through the desire to avoid paying damages, to introduce further safeguards into their industries.

The original legal doctrine regarding employer's liability in England and America was based on the principle of individual responsibility for acts of negligence. The doctrine is still almost unmodified in the United States. If accident to the workingman arises from his own carelessness, he must stand the loss; if due to the negligence of the employer, the latter is responsible. Practically the same rule was the foundation of the law in other European countries. It has been

abundantly shown in the experience of the different countries that this simple principle, so equitable in theory, has failed in practice to meet the requirements of a developing system of industry.

Until recently in England, and to-day in America, perhaps the greatest and most important hindrance to the effective working of the common law is to be found in the doctrine of common employment, or the "fellow-servant" doctrine, by which the employer is released from his original common-law liability for the negligence of his agent, in case the sufferer from such negligence is a fellow-employee of the agent.

This doctrine, of comparatively late introduction into English and American law and not known in other systems, has the effect of cutting off a greater and greater number of cases from right of redress, as the large industry and the corporation are further developed. In the corporation, functions formerly exercised by individual proprietors, who could be held directly responsible, are more largely exercised by superintendents and managers, who can not be so held, and for whom the real employer is not liable, as they have become "fellow-servants" in the technical sense. The large industry, moreover, unites as fellow-servants larger bodies of men, so that it becomes constantly less possible for the employee to know the ability or to keep watch on the acts of those with whom he labors.

A further restriction of the workingman's means of redress under the common law is found in the doctrine of contributory negligence. In cases where blame for the accident is divided between employer and employee, the liability is not divided; the courts hold that the workingman must stand the entire loss. If the employer can show that the employee has in the slightest degree contributed to the accident, he can "claim exemption for his own fault, no matter how grave."[1]

Another hindrance to the workingman in securing compensation, which has been experienced in all countries, is the growing difficulty, under modern conditions, of fixing definite responsibility for accident upon any one individual. In the large industry of the present day the individual worker is no longer able to carry on his own work on his own responsibility, with the conditions attending it under his own control. His actions depend on the actions of others. He has to take his place at some one stage of a long and complicated process, involving the use of complicated machinery, where the fault of one is liable to involve all the others, and yet it can not be plainly shown who has committed the fault.

Statistics gathered in foreign countries for the purpose of different accident insurance schemes make plain the difficulty of fixing liability upon the employer on the ground of his personal negligence. Of 10,217 accidents reported to one of the English private insurance

[1] Report New York State Bureau of Labor Statistics, 1899, p. 646.

companies, only 1,327, or 13 per cent, were granted compensation under the law requiring proof of the employer's negligence; and of 26,087 cases of accident compensated by the same company under ordinary policies, payable without regard to responsibility, about 3,026, or 12 per cent, would have been entitled to compensation under the liability law.[1]

The following figures compiled by the German Government show much the same thing:

Percentages of accidents in German industries traceable to different causes

[From the Report of the New York Bureau of Labor Statistics, 1899, p. 787.]

Causes.	Agriculture (1891).	Industry (1887).	Mining (1887).
Fault of employer	18.20	19.76	1.26
Fault of injured workman	24.43	25.64	29.89
Fault of both	20.11	4.45	.....
Fault of third person	2.75	3.28	4.23
Unavoidable or indeterminable	34.51	46.87	64.62
Total	100.00	100.00	100.00

A still more striking instance may be taken from the statistics of accidents indemnified in Austria from 1890 to 1894:[2]

Percentage of accidents traceable to—	
Fault of employer	1.4
Fault of injured workman	25.8
Fault of third person	1.6
Unforeseen contingencies	70.2
Unknown	1.0

These figures show that in both Germany and Austria a full half or more of all industrial accidents are due to causes for which neither employers, injured workmen, nor fellow employees are responsible, and that the number directly traceable to fault of the employer is but a small fraction.

The securing of compensation, both in England and other countries not under the common law, was, before recent statutory changes, made still more difficult by the fact that the burden of proof rested with the workingman to trace out these obscure causes; that no scale of compensation was fixed; and that, in consequence, long and costly litigation, which the workingman could not afford to undertake, was made necessary. This difficulty remains unmodified in the United States to-day.

Finally, under the common law, the workingman might be, and in many cases was and is, where that law remains unmodified, practically constrained by his employer to deprive himself of all rights of redress by a contract with the employer. This practice, familiarly known as

[1] Report New York Bureau of Labor Statistics, 1899, p. 657.
[2] Report New York Bureau of Labor Statistics, 1899, p. 1144.

"contracting out," often became one of the greatest abuses of the old system.

The recent far-reaching legislation on employer's liability in European countries has been directed toward doing away with part or all of the evils above described.

In England the employer's liability act of 1880 extended the employer's liability to cases of accident arising from defective machinery or plant, and restricted the fellow-servant doctrine by making the employer liable for the acts of those of his employees who had the giving of orders. But the employee was considered to have accepted the risk and have freed his employer from liability if he knew of defects or negligences and had failed to notify some one in authority. This latter provision became a new hindrance to the workingman in securing compensation, as, in practice, he was kept from notifying the employer of defects and negligences by fear of discharge. The workmen's compensation act of 1897, by granting compensation for all injuries arising in the course of employment except those attributable to the serious and willful misconduct of the workman himself, made a clean sweep of the fellow-servant doctrine and of the defense of contributory negligence, and by doing away with the necessity for tracing responsibility to the employer, in so far was calculated to reduce the time and cost of litigation. Furthermore, the act especially provided against contracting out (except in cases where the advantage of the employee was equally secured), and shifted the burden of proof to the employer. The same provisions, in substance, were enacted in South Australia in 1900.

In Germany practically the same ends were reached by the accident insurance law of 1884, which, however, went a step beyond the English law by guaranteeing payment of the compensation awarded through a system of compulsory insurance by the employer. Of laws enacted in other European countries, either on the English or the German model, the French law is worthy of note as a type between the two as regards securing the payment of compensation. As in England, the employer is not obliged to guarantee his payments by insurance, but an approach is made to the German system of collective responsibility by providing that the State itself, in case of the employer's failure to pay annuities, assumes the responsibility for them.

As has been noted, in this entire movement abroad the thought has been more clearly brought out that such accidents as occur in industry at any given stage of development of a preventive system are far more largely a matter of general industrial risk than of personal responsibility. The degree of this risk varies with different industries, and occasions a greater or less pressure to bring industries within the scope of employers' liability laws. Railroads stand forth prominently for frequency of accidents, and in this industry the movement for change from the old common-law system came earlier

in foreign countries than that regarding industries in general. Even in the United States, where the common-law principle has received such slight modification, statutes modifying the common law in regard to railroads only have been enacted in seventeen States, constituting, in most cases, the only legislation yet passed on the subject. The mining industry also involves high industrial risks, and so also do the quarries, the building trades, and factory work of certain kinds.

The industrial risk of different occupations may be compared, with any degree of accuracy, only through foreign statistics. The following table shows the comparative risk of occupations in England, as seen by the proportion of killed and injured, in certain large branches of industry, to all employed:

Risk of accidents by occupations—England.[1]

Occupations.	Number per 1,000, all employed, of those reported—	
	Killed.	Injured.
Railway service (1898)	1.0	24.3
Mines (1899)	1.2	5.8
Quarries (1898)	1.0	10.7
Shipping (1898)	.1	9.3
Factories (1897)	.6	12.9

[1] Computed from table in report New York Bureau Labor Statistics, 1899, p. 694.

The following table gives industrial risk in certain leading occupations as shown by German statistics:

Industries ranked according to frequency of accidents for Germany, 1897.[2]

Industries.	Accidents indemnified per 1,000 full-time workmen.	Order of industries as to—	
		All accidents.	Fatal accidents.
Vehicle driving	16.97	1	3
Grist mills	13.51	2	10
Packing and dispatch	12.36	3	7
Mines	12.09	4	4
Quarries	11.94	5	5
Excavating	11.85	6	9
Wood	11.77	7	18
Interior navigation	11.35	8	1
Breweries	11.31	9	11
Building	11.04	10	8
Paper	9.27	11	15
Ocean navigation	8.95	12	2
Iron and steel	8.92	13	17
Sugar	7.89	14	12
Chemicals	7.76	15	13
Distilleries	7.67	16	14
Provisions	7.03	17	24
Food	6.79	18	23
Bricks	6.71	19	16
Chimney sweepers	6.14	20	20
Railroads	5.86	21	6
Fine mechanics	5.38	22	27
Leather	5.23	23	19
Gas and water	5.14	24	21
Street railways	5.14	25	22
Metals	4.21	26	29
Glass	4.07	27	25
Musical instruments	3.96	28	31
Textiles	3.41	29	28

[2] Report New York Bureau Labor Statistics, 1899, p. 769.

The following table from Austrian statistics shows comparative risk with regard to fatal accidents:

Order of certain selected groups as to frequency of fatal accidents for Austria, according to the average for seven years, 1890–1896.[3]

Order.	Groups.	Average annual number of deaths per 1,000 "complete" workmen, 1890–1896.
1	Quarries	3.39
2	Pits	2.53
3	Building	2.24
4	Subsidiary building trades	1.75
5	Construction work	1.52
6	Woodworking	1.27
7	Mills	1.21
8	Liquors	1.12
9	Fertilizers	1.11
10	Smelting and subsidiary operations	.95
11	Production of power for sale	.91
12	Agriculture and forestry (using machinery)	.90
13	Explosives and matches	.85
14	Materials for heating and lighting	.72
15	Food products	.72
16	Chemical industry, chemicals and drugs	.71
17	Railway construction, railway shops, etc	.59
18	Paper and cardboard	.47
19	Machinery, tools, etc	.42
20	Oils and fats	.41
21	Ships and conveyances	.37
22	Iron and steel	.23
23	Metal working, enameling, etc	.20
24	Glass	.19
25	Leather goods	.18
26	Rubber, gutta-percha, etc	.15
27	Cotton and shoddy	.14
	Insured under law of 1894.	
1	Water transport	2.50
2	Repair and care of buildings	1.79
3	Vehicle driving	1.41
4	Warehouses	1.24
5	Fire departments	.77
6	Theaters	.16
7	Street cleaning	.....

[3] Report New York Bureau Labor Statistics, 1899, p. 956. A few minor industries are omitted.

The significance of the above table is diminished by the fact that mining and railway transportation, both highly hazardous industries, find no place there, as mining comes under a special law, apart from the general insurance law, and railway transportation did so until 1894, when the general law was extended to cover it.

The field now covered by the compensation acts of the principal European countries is, in general, that of the mines, quarries, railways, and other transportation by land or by water, building, construction and engineering work, and factories using power machinery or employing more than a certain number (say 5) workmen.

In the following countries a fixed scale of compensation, according to the degree of the accident, is provided in the law: Germany, Austria, Norway, Finland, Great Britain, Denmark, Italy, France, and Spain. This feature in itself is important in reducing the litigation likely to arise in the effort of the workingman to secure damages,

while of course the extension of employers' liability to all kinds of accidents except those due to the intentional or willful act of the workman himself tends to the same end.

Whether these laws have really decreased litigation, as they were expected to do, is a matter of more or less doubt. In England the amount of litigation under the compensation act seems to have been considerably less than it was under the employer's liability act, and the real burden of litigation, as measured by expense, is said, notwithstanding the large number of appeals recorded, to be much lighter than it had been before the passage of the act.

It is next to be asked how far these laws have gone in securing the great end desired—the diminution of accidents. One would expect to see two opposing tendencies at work through the operation of these laws—one to reduce, the other to increase accidents. The employer, charged with the burden of practically all accidents, would naturally endeavor to lighten this as much as possible by taking greater precaution; the workingman, freed from the burden, might perhaps become more careless and negligent in trying to prevent accidents. Of course, no influence either way would be exerted upon accidents due to causes which neither employer nor employee could reasonably be expected to prevent.

As to the actual facts, the statistics of accidents in different countries since the passage of the new law show on their face a general increase of accidents. In many instances, however, this increase of rate is due to the more complete system of reporting accidents required when a comprehensive scheme of compensation is introduced. It may further be urged that the actual risk of accident is growing in manufacturing countries, owing to sharper competition, the more intense application of workmen, the higher speed of machines, the introduction of untrained workmen as machine tenders, the assembling of larger numbers in one room or building, and the increasing contact with dangerous substances. Finally, the time of operation of the laws is not yet long enough to give satisfactory statistical results.

A further consideration is the cost of such systems and the incidence of charges. It has been variously claimed that the workingman, the employer himself, and the purchaser of the product pay the expense of the compensation awarded to workingmen. In practice, under a comprehensive liability law, the burden will rather be shifted between the employer and the public than between the workingman and the employer.

Applying these considerations to the status of employer's liability in the United States, the first point to be noted is that, in this country, the law remains, in the main, where the English law was before the passage of the employer's liability act. The common law of England as to negligence, including the "fellow-servant" doctrine, is the foun-

dation of the employer's liability laws of this country. In fourteen States and Territories, as has already been noted, statutes modifying to a greater or less degree the "fellow-servant" doctrine have been enacted, applying to railroads only.[1] Indiana, Mississippi, and Montana modified the doctrine with respect to corporations generally (in Indiana those "other than municipal"). Ten States and Territories make the employer liable for defective appliances, four of which limit the application of the law to railroads, and one to corporations. In States where special statutes have been enacted modifying the common law, these statutes usually contain provisions against contracting out.

Complaints as to the working of the law as it stands are now heard similar to those made in European countries as to the older laws there, and some change in our own laws may reasonably be expected. As a matter of fact, the decisions of the courts under the common law, while confused and conflicting, usually are against the workingmen, and the difficulty of litigation is so great that comparatively few injured employees ever secure any compensation. Since industries are carried on under practically the same conditions as in Europe, it is rational to expect an increasing recognition of the principle of industrial risk as against personal responsibility with regard to compensation of accidents. Probably no such complete scheme of compulsory insurance of workingmen by their employers could be introduced here, under present conditions, as the German plan; but legislation after the English model does not seem out of reach. And, finally, as in other classes of labor legislation, greater uniformity, both of principle and practice, is desirable.

BUREAUS OF LABOR STATISTICS AND LABOR LEGISLATION.

The importance of accurate information as a basis for legislation respecting the relations of capital and labor has led nearly all the States of the Union to establish State bureaus of labor and labor statistics. Massachusetts led in this movement, the bureau in that State having been created in 1869. Other States have followed in proportion to the increasing importance of labor legislation. The Government of the United States established in 1885 the Department of Labor, which deals with wage statistics and investigations in manufactures and mining. The Department of Agriculture includes a division of statistics which has, from time to time, compiled summary reports of farm wages throughout the United States. Foreign countries have followed much later than American States in the creation of departments of labor investigation. In Switzerland the Labor Secretariat, an office of the

[1] Georgia, Iowa, Kansas, Wisconsin, Minnesota, Florida, Ohio, Texas, New Mexico, Arkansas, North and South Carolina, Missouri, and North Dakota.

Federation of Labor Organizations, has existed since 1886, and is subsidized by the Government; other countries did not establish such bureaus until 1891 in France and Germany, 1892 in New Zealand, 1893 in Great Britain, and 1895 in Belgium.

While the bureaus of labor statistics of American States have been created to collect statistics, to inquire into strikes, and, in some cases, to conduct bureaus of employment, or to act as State boards of arbitration, their greatest usefulness is found in the assistance they give to the legislatures and the people in considering and enacting proper laws for the protection of labor interests. Many of the State bureaus and the Federal Department of Labor have conducted investigations of material assistance in this direction; but it must be allowed that, on the whole, the bureaus do not afford such direct assistance in legislation as is needed.

If it were possible to provide that in all legislation regarding labor the representatives of the two contending interests should have the assistance of the State bureaus of labor statistics or the Department of Labor, and that inquiries regarding the facts at issue should be conducted by these expert investigators in a nonpartisan way, under the advice of the several interests, it would appear that the usefulness of these bureaus might be greatly enhanced. In France, Belgium, and Austria, Councils of Labor, composed partly of representatives chosen in equal numbers on the nomination of labor organizations or similar bodies and of associations of capitalists and manufacturers, and partly of experts appointed by government, have been created as aids to parliament in enacting labor legislation. The bureau of labor statistics, under such an arrangement, conducts investigations suggested by this council, bearing directly upon the mooted questions of fact.

Kansas in 1898 enacted a law creating the State Society of Labor and Industry, a body composed of delegates from labor organizations throughout the State. The secretary elected by this organization is made ex officio State commissioner of labor. The convention of the State Society in 1899 included 78 delegates, and in 1900, 130 delegates, representing local unions throughout the State. The object of this law is to bring the compilation of statistics on labor more directly home to the labor interests of the State, to remove that department from political influence, to free its work from partiality, and to secure the cooperation of the citizens in the collection of statistics and information bearing upon legislation. The new system has proved highly satisfactory, it is asserted, both to the workingmen and to employers, and has brought about a material improvement in the character of investigations, and especially in their practical assistance in framing legislation.[1] It might be observed that the Kansas legislation is defective in that the State Society of Labor and Industry

[1] Report National Association of Officials of Bureaus of Labor Statistics, 1900, p. 74.

does not include representatives of the employers, or chambers of commerce, or farmers' organizations, all of whom are equally interested with labor organizations in the proper management of such a bureau and in the character of the legislation which it assists in framing.

An example of successful cooperation between a State bureau and representatives of the employers and employees has been brought to the attention of the Commission in the case of the revised mining law of Illinois, adopted in 1899. Since the first enactment of mining legislation in that State, 25 years ago, several provisions have been declared unconstitutional, and amendments have been added which rendered the system inconsistent and incongruous. The State commissioners of labor thereupon invited representatives of the miners' organizations and the mine operators of the State to join in the revision and codification of the law. The result of their work was an extensive and complete law, which is admitted to be the most nearly perfect of all mining legislation of the United States. It was unanimously agreed upon by both the operators and the miners, and when it came to the legislature it was passed unanimously, without amendment.[1]

This example of cooperation between a State bureau and the representatives of employers and employees, and probably similar ones in other States, as well as the experiment just described in Kansas, lead to the conclusion that, with a provision in the creation of bureaus of labor statistics for the cooperation of the two interested parties, these bureaus in the several States would be able to fulfil more directly the principal object to be attained in their creation—that of assisting more practically the legislature in the enactment of laws which shall not only protect labor as it stands fairly in need of protection, but also deal fairly with employers, and so promote the industries of the State.

IV. LABOR ON PUBLIC WORKS.

Several witnesses before the Industrial Commission have advocated the policy that all work constructed for either the Federal, State, or local governments should be constructed directly by the employees of the department and not through contractors. The main argument advanced in favor of this policy is the higher wages and fewer hours of public employees, and the disadvantage which, on this account, the system of direct employment is under in comparison with the longer workday and lower wages paid by contractors. An investigation made by the Department of Labor in four leading cities[2] reaches the conclusion that in public employment, in general, the highest rate of wages is paid for the shortest working day. The advantages and disadvantages

[1] Reports Industrial Commission, Vol. XII, p. 190.

[2] Bulletin, Department of Labor, November, 1896.

of public employment in the Navy Department have been summarized as follows by Chief Naval Constructor F. T. Bowles, in a hearing before the House Committee on Naval Affairs,[1] wherein he advocated a larger use of the navy-yards for constructing war vessels. The advantages named are:

1. Maintenance of efficiency of the force and plant by keeping them in continuous use. These are already required for repairs, but when repairs are not needed the force must be temporarily discharged. If a vessel could be under construction at all times, the employees, when there is lack of repair work, could change to construction work, and the force could thereby be kept in constant employment.

2. Repairs could be made more economically and rapidly, since an adequate staff of employees would be at hand, without the necessity of breaking in new and inexperienced help.

3. It would reduce the amount of repair work, which at present is magnified in order to maintain a force of employees when permanent work is not ahead.

4. Maintains a standard of workmanship and design on a basis of practical experience.

5. Provides training for those who must inspect contractors' work. An ignorant inspector is fussy and demands too much in unimportant and costly ways, so that the contractor will add 15 or 20 per cent to his next price.

6. No profit to be made on the plant.

7. Indirect charges, which in commercial practice make a large percentage of the cost, are not included, because these navy-yards are already maintained for repair purposes. This is practically a saving of interest on plant, taxes, insurance, depreciation and care of property, and a large proportion of the office and organization expense. For these expenses merchant shipyards estimate from 25 to 35 per cent on the cost of material and labor going into the ship.

8. The cost of inspection is saved, since the inspectors and draftsmen of the navy-yard act as inspectors when the ships are constructed at the navy-yard. There are more people inspecting the ships built by contract than it takes to manage the work of construction of the same ships in the navy-yard.

9. Cost of trial trip is saved.

10. Saves the claims for extras by private contractors, who endeavor to make these as large as possible. The builders of the Indiana brought suit before the Court of Claims for extras to the amount of $483,000.

Disadvantages named are:

1. The cumbersome system of design and of management by independent bureaus in the Navy Department. There is the Bureau of

[1] House Committee on Naval Affairs, Shipbuilding in Government Yards, March 13, 1900.

Construction, which designs the hull; the Bureau of Ordnance, which specifies the armament and armor plate; the Bureau of Steam Engineering, which designs the boilers and machinery; the Bureau of Equipment, which puts in the anchors, chains, and electric lighting. Practically there is no center head. In the case of contract work these bureaus feel a certain responsibility to coordinate their work, more or less, because otherwise charges for extras, which are prescribed by law, must be allowed.

2. Wages in the navy-yards are 30 to 40 per cent higher by the day than those paid in private yards, and since the number of hours is eight instead of ten, as on contract work, this adds another 30 to 35 per cent to the cost of labor per hour, making the wages per hour 60 per cent to 75 per cent higher than the wages per hour paid by contractors. The law requires that these wages be the same as those paid in the vicinity, but these are only small repair shops, without steady work, consequently wages are regulated by the trade unions on the basis of irregular work.

3. Boy and unskilled labor is not used to advantage on account of artificial restrictions of the labor board, necessitated by the civil-service law. An employee, according to that law and the regulations thereunder, can be employed only on the kind of work for which he is registered, and can not be transferred to other work. This, while it is necessary in order to protect the civil-service law against evasion, increases the cost of labor compared with the cost to contractors.

4. Seven holidays fully paid, or 2½ times pay for holiday work.

5. Purchase of material by the navy system involves delay and extra cost. The time and trouble of bidding and furnishing bonds drives off many good contractors. The materials thus cost 10 per cent more than under private management. This is an infirmity of public management, in which interest and good management depend upon the system rather than upon the individual, but it would be largely obviated by buying in larger quantities if the Government had more work to do, as in England. Our public shipyards should be allowed to buy for future needs when prices are low, which can not be done because the contractor is not allowed to exercise his individual judgment.

6. Outside plants are better arranged and no restrictions are placed on utilization of space to the best advantage.

7. Per diem compensation is used where office work is economical.

8. Navy-yards give no bond or guaranty of performance under contract conditions.

Mr. Bowles stated that—

The English Government has shown that a government can build ships in competition with outside shipyards. Nobody can say that we can not do it, because we

can. It is only a matter of the means, the regulations, and the methods, and the men; and it can be done, and it can be done very quickly, if you want to do it—very quickly. There is no question about it. In other countries the custom is somewhat different. The practice in England, of building a large proportion in the merchant shipyards, and varying that proportion in accordance with the degree of activity which exists outside—that is, if the outside shipyards are dull the work is put there; if they are busy the other part of the work is taken into the government yards—encourages and keeps up the merchant shipyards and enables them to keep steadily on in their work, and at the same time gives the government efficient yards of their own.

Constructor Bowles estimated that the cost of construction of vessels in navy-yards under the conditions existing at the time of the hearing would be fully 15 per cent in excess of the cost done by contract, but that an equivalent saving would be made over private-built ships if the navy-yards were properly organized, as they can be without much difficulty. He estimated further that, with these improvements, the New York Navy-Yard could build ships as cheaply as they are built by contractors, not including the indirect charges for interest, insurance, taxes, depreciation, and management, which are already covered by the need of the navy-yards as repair shops. In his judgment the best results are obtained when ships are constructed both by contractors and by the navy-yards.

Since the time when this testimony was given before the House Naval Committee, Congress has adopted a law granting employees in the navy-yards 15 days' leave of absence each year with full pay. This is unquestionably one of the most serious blows that have been struck against a further extension of public employment in place of contract work in the construction of war vessels. Deducting 15 days at full pay increases the labor cost 7½ per cent, and makes it impossible, with the handicap already existing, for those who are responsible for public work to advocate a further substitution of direct employment for the contract system.

The following table was submitted by Constructor Bowles, showing comparatively the cost of four ships built in the navy-yards and three built in private yards. The final column shows the cost per ton of the finished vessel. The two battle ships, the *Maine* and the *Texas*, built in the navy-yards, may be compared with the *Indiana*, built about the same time in a private yard. The *Maine* cost somewhat more than the *Texas*, but comparing the *Texas* with the *Indiana*, including in the cost of the latter not only the first cost under the contract but also the final cost of the finished vessel, it is seen that the cost of the *Texas* per ton was $819, and the cost of the *Indiana* per ton completed was $669, so that the *Texas* cost more than the *Indiana* by 22.4 per cent.

The *Raleigh*, built in the Government yards, was the most expensive type of ship ever built at that time, on account of the large amount of

machinery put into such a very small vessel, the cost being $780 for hull and machinery. Of vessels built by contractors, that which is nearest in type to the *Raleigh* is the *Minneapolis*, which cost $462 per ton for hull and machinery. But the final cost was $817 for the *Raleigh* and $624 for the *Minneapolis*. The *Raleigh* may also be compared with the *Detroit*, which shows a cost of $817 as against $740 in private construction.

Relative cost of battle ships in public and private plants.

Name.	Date of laying of keel.	Date of first commission.	Hull and machinery.			Ships without stores, ammunition, or water in boilers.		
			Cost of hull and machinery.	Weight of hull and machinery.	Cost per ton of hull and machinery.	Final cost of finished vessels.	Weight without stores, ammunition, or water in boilers.	Cost per ton of finished vessels.
				Tons.			*Tons.*	
Maine[1]	Oct. 17, 1888	Sept. 17, 1895	[3]$3,305,409.87	3,836,920	$861.47	$4,677,788.75	5,436.35	$860.46
Texas[1]	June 1, 1899	Aug. 15, 1895	[3]2,949,549.12	3,595,690	820.30	4,202,121.49	5,124.69	819.91
Cincinnati[1]	Jan. —, 1890	June 16, 1894	[3]1,995,773.30	2,358,183	846.31	2,371,904.52	2,675.92	886.38
Raleigh[1]	Dec. —, 1899	Apr. 17, 1894	[3]1,839,965.23	2,358,183	780.24	2,199,729.80	2,691.00	817.43
Minneapolis[2]	Dec. 16, 1891	Dec. 13, 1894	[4]2,690,000.00	5,816,760	462.45	3,849,996.44	6,161.20	624.87
Indiana[2]	May 7, 1891	Nov. 20, 1895	[4]3,063,000.00	5,691,100	538.20	5,983,371.98	8,943.30	[5]669.03
Detroit[2]	Feb. —, 1890	July 20, 1893	612,500.00	1,449,650	412.52	1,233,039.90	1,660.00	740.11

[1] Built in navy-yard.
[2] Built in private yard.
[3] Amount expended in navy-yards.
[4] Contract price.
[5] Contractors have sued for $483,000 damages, which would bring cost to $724, or 13 per cent of the Texas.

There were peculiar reasons why the ships built in the Government yards should have cost more at the time they were built than would be the case at the present time. No ship had been built in the Norfolk yard for twenty-five years, so that an expense of nearly $100,000 for machinery and equipment had to be made and charged to the vessel. The day the building of the *Texas* was begun the Navy Department appointed eleven foremen, none of whom had ever had anything to do with the building of a steel ship. The handicap suffered, owing to this unprepared condition, and the necessity of educating the labor, is estimated at about 15 per cent. This deducted from the cost of the *Texas* would bring that vessel down to within 7 per cent of the *Indiana*. The *Texas* was delayed by the nondelivery of the armor, although the order was delivered to the mill before the orders of private contractors. The contractors on the other ships had influence enough to get in ahead, on the ground that they would sue for damages if delayed.

Naval Constructor Albert W. Stahl, at the hearing of the Naval Committee of the House, submitted the following table relative to certain private-built ships, showing that the total cost of such ships is considerably in excess of the contract price:

Comparison of contract price with total cost of certain ships.

	Monterey.	Olympia.	San Francisco.	Oregon.	Massachusetts.	Indiana.
Payments on account of contract	$1,647,728.64	$1,796,000.00	$1,423,231.50	$3,272,403.99	$3,045,576.48	$3,055,272.39
Extra to contractors for authorized changes	107,093.02	103,831.30	47,739.94	265,862.69	171,111.12	149,960.42
Work done by Government plans, inspection, etc	73,588.03	70,878.67	141,840.16	248,165.75	209,293.32	257,032.19
Hull armor	237,790.26	.....	.....	828,468.34	828,929.74	837,864.62
Armor for gun protection	190,584.38	141,522.62	.....	1,029,591.42	1,030,051.58	977,134.62
Speed premiums	.....	300,000.00	100,000.00	175,000.00	100,000.00	38,500.00
Trial-trip expenses	11,547.42	39,267.09	25,446.32	22,913.99	16,822.73	17,924.42
Care and preservation, insurance, etc	.....	82,525.86	.....	71,615.72	.....	.....
Total cost	2,268,281.75	2,484,027.54	1,738,257.82	5,914,021.90	5,401,844.97	5,333,708.65
Contract price	1,674,839.60	1,796,000.00	1,428,000.00	3,301,510.00	3,090,000.00	3,090,000.00
Excess of total cost over contract price	593,442.15	688,027.54	310,257.82	2,612,511.90	2,311,844.97	2,243,708.65

Prior to the adoption of civil-service rules and their extension to the labor service, public employment was seriously handicapped through the inefficiency of those employed, but since the adoption of these rules it is quite generally agreed that the efficiency of employees in the navy-yards has greatly improved. The main handicap at the present time, in comparison with work done by contractors, is found in the fewer hours, the higher wages, the holidays and leave of absence and the veterans' preference. This disadvantage holds true, more or less, for all branches of government, not only National, but State and local, and in the latter case it applies mainly to the larger cities, since the smaller local divisions generally pay the same wages and observe the same hours as in the neighboring private employment. Within the past few years there is to be observed a tendency to extend, through legislation, the same conditions of hours and wages to contractors on public works as those provided by law for public employees on the same class of work. Kansas in 1891 and New York in 1897 enacted a so-called "prevailing rate of wages law," requiring every contract for the construction of the public work to contain a provision that the same shall be void and have no effect unless the prevailing rate for the legal day's work in the same trade or calling in the locality where the work is to be done shall be paid by the contractor to his employees.[1] This law was declared unconstitutional in New York by the court of appeals on the grounds that it was not a police measure and it interfered with the freedom of contract. In Great Britain, where public

[1] Reports Industrial Commission, Vol. V, p. 23.

wages are but slightly higher than those paid in private employment, it is at the present time quite generally the rule that contractors on public works are required to pay the same wages and observe the same hours as the public departments themselves. Apart from the question of unconstitutionality, a regulation of this kind, applying to public employment in the different branches of government in this country, is not only a means of placing public and private employment on the same level of proper regard for the interests of those whose services are rendered for the public, but also the only means of placing the two systems of constructing public works on such an equality, respecting cost of labor, as not to seriously handicap public employment in a comparison between the two.

RECOMMENDATIONS OF THE COMMISSION.

A report on general labor legislation was presented by the Commission to the Fifty-sixth Congress (Volume V of the Commission's reports). That report recommended improved legislation, mainly for the consideration of State legislatures. Subsequent investigations by the Commission have not revealed any pressing necessity for modification or enlargement of these recommendations; we therefore renew them in this final report.

The subject of convict labor is specially discussed in the third volume of the reports of the Commission, which contains our recommendations on that subject.

The recommendations on general labor legislation are as follows:

Perhaps the subject of greatest public interest to-day is that of the regulation of the hours of labor permitted in industrial occupations, and especially in factories. Most of the Northern and Eastern States prohibit the employment of persons under the full age in factories or other mechanical establishments for more than a prescribed time per diem, usually ten hours, and not exceeding sixty hours per week. Obviously, Congress has no power without a constitutional amendment to legislate directly on this subject. The Commission are of the opinion that a uniform law upon this subject may wisely be recommended for adoption by all the States. We believe that such legislation can not, under the Federal and State constitutions, be recommended as to persons, male or female, above the age of 21, except, of course, in some special industries where employment for too many hours becomes positively a menace to the health, safety, or well-being of the community; but minors, not yet clothed with all the rights of citizens, are peculiarly the subject of State protection, and still more so young children.

The Commission are of opinion, therefore, that a simple statute ought to be enacted by all the States to regulate the length of the working day for young persons in factories (meaning by "young persons" those between the age of majority and 14); and in view of the entire absence of protection now accorded by the laws of many States to children of tender years we think that the employment of children in factories in any capacity, or for any time, under the age of 14 should be prohibited. The question of shops and mercantile establishments generally appears even more subject to local conditions than that of factories; therefore the Commission see no need for even recommending to the States any uniform legislation upon this subject. But child labor should be universally protected by educational restrictions, providing in substance that no child may be employed in either factories, shops, or in stores in large cities, who can not read and write, and, except during vacation, unless he has attended school for at least twelve weeks in each year.

Further regulation, especially in the line of bringing States which now have no factory acts up to a higher standard, is earnestly recommended.

The Commission would further recommend that the length of the working day in all public employment should be fixed at eight hours, in line with the present act of Congress, which should further be strengthened in some particulars. The objection that this discriminates between public and private employment is recognized, but in our judgment is outweighed by the demonstration of the benefits of a shorter day, which, it is hoped, will bring private employment to the same standard.

The Supreme Court of the United States has affirmed the constitutionality of the Utah law limiting the length of the day's labor in mines or underground workings, even in the case of male citizens of full age. The Commission would therefore recommend that the provisions of the Utah constitution and statutes be followed in all the States, by which the period of employment of workmen in all underground mines or workings shall be eight hours a day, except in cases of emergency, when life or property is in imminent danger, and also that the employment of children under the age of 14 and of all women and girls in mines or underground quarries and workings shall be forbidden.

Under the interstate commerce power, Congress might well enact that no person under 18 should be employed as a telegraph operator upon railroads, following the Colorado and Georgia statutes, and that all engineers and switchmen should submit to an examination for color-blindness; also that it be made a misdemeanor for an engineer or switchman to be intoxicated while on duty.

A simple and liberal law regulating the payment of labor should be

adopted in all the States, providing that laborers shall be paid, for all labor performed, in cash or cash orders, without discount, not in goods or due-bills, and that no compulsion, direct or indirect, should be used to make them purchase supplies at any particular store. More stringent legislation, as by providing that mining employers, etc., may not run supply stores at all, must necessarily be determined by the several States according to their local conditions. The company-store acts now in existence are frequently evaded by the device of giving a percentage on all purchases to the employer, or paying commissions on all collections from his employees. It may be difficult to devise a uniform law touching such matters, but the attention of the State legislatures is called to such evasions and the abuses arising therefrom. Provisions for the fair weighing of coal at mines before passing over a screen or other device, in order that the miner may be compensated for all coal having a market value, should be adopted, and the miners should have the privilege of employing a check weighman at their own expense.

The question of the enforcement of the labor contract by injunction or contempt in equity process is a very difficult one, mainly so made by the abuses which have arisen from injunctions carelessly issued by learned judges or by the unlearned judges of inferior courts in States which confuse chancery and common-law jurisdiction. The injunction is a high prerogative writ, and should be awarded only after the most careful examination by a tribunal thoroughly competent. Wherever possible, and wherever the transaction complained of is a simple criminal offense, it should be left to the jurisdiction of the local criminal courts, aided, if necessary, by the police or military authorities; but when the case is one which is properly a subject of equity jurisdiction, and where issuance of an injunction is really necessary to prevent irreparable loss or wrong, it seems to be going too far to say that no contempt of the injunction shall be punished without all the delays and safeguards of an ordinary jury trial. It might be well to limit punishment for contempt to imprisonment for a brief period, but equity courts must not be deprived of the power to protect themselves and make their decrees respected. At the same time, the practice of awarding blanket injunctions against all the world, or against numerous unnamed defendants, as well as the practice of indirectly enforcing the contract for personal service by enjoining employees from quitting work, should be discouraged not only by popular sentiment, but by intelligent judicial opinion. There should be no unnecessary departure from the time-honored principle that the contract of personal service can not be specifically enforced, because to do so entails a condition of practical slavery.

The statutes concerning intimidation are extremely interesting, but seem to require no particular comment. They are principally little

more than expressions of the common law. As, however, they have so generally been adopted in the States, it might be wise for Congress to adopt such a statute relative to railway labor, and for that purpose the New York statute, generally followed in the Western States, is probably the best. The Maine law applying to railroads is very full and explicit and might well be adopted by Congress for all railroads or other interstate carriers, supplemented by the provisions of the New York Penal Code (sec. 653).

There is at present no Federal legislation protecting the political rights of laborers, and it would seem that the ordinary State statutes, which prohibit employers from coercing employees in the exercise of their right of suffrage or from seeking to influence them by pay envelopes, threats of discharge, or otherwise, could properly be made a national law applying to elections to Federal offices. The New York statute (Penal Code, sec. 41, laws 1894, chap. 714) is perhaps the most complete, and might well be copied.

The legal rights of laborers in suits, etc., must necessarily be left to the regulation of the States creating the courts where they are conducted, but the United States bankruptcy act should be amended by copying the usual State law (see New York General Laws, chap. 32, art. 1, sec. 8), by which a preferred lien is given to all employees, clerks, and servants for debts due for wages and salaries, above all other claims, except taxes or debts due the Federal Government, if such debts were incurred within six months before the assignment or receivership, whether of a person, or a corporation, or the death of a deceased insolvent.

Convict labor is the subject of a special report, but it seems clear that Congress should legislate to prevent the importation and sale of convict-made goods from one State into another without the consent of the State into which the goods are imported, or where they are sold. The importation of foreign convict-made goods has been probibited by act of Congress. (See tariffs 1890, 1894, and 1897.)

In States which have many factories the well-known factory act of Massachusetts or New York, based upon the English act which served as a model to all such, is recommended for uniform adoption.

The sweat-shop law, also, which is now practically identical in the important States of New York, Massachusetts, Pennsylvania, and Ohio, is recommended for general adoption.

On the subject of railway labor, which is undoubtedly covered by the interstate powers of Congress, the Commission are of opinion that Congress should adopt a consistent code of law regulating all matters concerning employment in that industry, such as the hours of labor, the limitation of continuous runs by engineers, or continuous service by telegraph operators or switchmen, without period of sufficient rest, the enactment of a consistent employers' liability code,

including a definition of the fellow-servant doctrine, the liability of the employer or corporation for defective appliances, etc., with definitions of what appliances, bridges, car-couplers, overhead guards, bridge guards, blocking of switches and frogs, and all such matters shall be required from railways, and defect of which shall shift the burden of proof of notice upon the defendant; that such a complete code adopted should be made binding in accident cases whenever they are tried in the Federal courts, without regard to the laws of the State or Territory where the accident occurred, so far as such a provision is constitutional; and the Commission are of opinion that such a provision would be constitutional in so far as it applied to matters of procedure—that is, evidence, or burden of proof, rather than substantive right of action; and all such regulations would be constitutional as applied to railway cases or steamboat carriers under the interstate commerce doctrine; but beyond this the terms of the law might well apply, as has been said, to all cases arising in any employment which are brought in, or are ultimately tried in, the Federal courts, leaving the court in each case to determine whether in fact the statute can constitutionally be applied to the circumstances of the case.

Such a code would not only have the great advantage of simplifying conditions throughout the country in the large class of railway and steamboat employments, but the force of example would be so great that even in matters where Congress could not properly interfere, such as the substantive cause of injury in an occupation not of interstate commerce, the States would be led by force of example and uniformity, it is hoped, to voluntarily adopt this code, and thus make the law identical in all occupations throughout the country. This the Commission believe to be one of the most important efforts in the labor interest to which the attention of Congress can possibly be invited.

The Commission note that trade unions have rarely, if at all, taken advantage of the statutes permitting them to incorporate. Under the national act (U. S. Stats., 1886, Chap. 567) not one prominent trade union has, in the thirteen years since its enactment, been incorporated.

The statutes already adopted in the several States, discriminating as between union and nonunion labor by making it a penal offense for an employer to exclude union labor only, seem to us unconstitutional, being class legislation. The statute should apply to union and nonunion labor alike, if it is to be enacted at all. The right to be employed and protected without belonging to a union should be preserved; but every facility should be given labor to organize if it desires, and the last vestige of the notion that trade unions are a criminal conspiracy should be swept away.

Almost universally the States have adopted statutes protecting trade-union labels. Against such statutes there can be no possible objection in principle, and Congress might well enact a similar law.

On the important subject of strikes and boycotts, reference is had to the digest in Volume V. The experiments of the States in regulating them by statute are extremely interesting. Substantially, they come to this, that a strike shall be always legal except when conducted on a public employment in such a manner as to injure the public safety or health; and, on the other hand, that a boycott or combination to injure or control the liberty of an individual is always illegal, sometimes criminal. This is substantially the modern American common law. Nothing should be a conspiracy in a trade dispute except where the acts actually committed or the object of the combination would be an act criminal under the common law.

Laws against blacklisting have very generally been adopted, and are probably sound in principle when they do not go to the length of prohibiting privileged communication or fair information upon subjects of mutual interest, for the blacklist in itself is a kind of boycott and is covered by the common law on that subject. Congress has already legislated upon blacklists in railway employments and upon compulsory benefit societies by the act of June 1, 1898, but these subjects require further consideration.

The use of private police detectives, or other armed bodies of hired men, generally imported from one State to another, to repel a strike or defend property, or newly engaged employees, in times of labor trouble, has aroused the anxious attention of many State legislatures, some of which have gone to the length of passing laws of doubtful constitutionality forbidding the passage of persons from one State to another for the purpose of such protection. This matter lies probably within the powers of Congress, and a reasonable statute to prevent abuses should be enacted.

The arbitration and conciliation laws have recently been considered by Congress in connection with the arbitration act applying to railway disputes (U. S. Stats., 1898, 370). In a general way, the Commission would report that such laws in the States have been found effective for purpose of concilation, but that the strict arbitration machinery rarely functions well. The arbitration laws now existing, particularly the national act of 1898, should be made clear, so that the parties to the arbitration, whether employer or employee, should appear as lawfully constituted associations or corporations, or otherwise as individuals with proper machinery for representation by their leaders; and the Commission believe that whoever inaugurates a lockout or strike without first petitioning for arbitration, or assenting to it when offered, should be subjected to an appropriate penalty. The object of the first recommendation is to get responsible parties to the record, and to make sure that the individuals concerned in the difficulty are lawfully represented in the proceedings; and the object of the second

recommendation is to encourage peaceable adjustments of differences and to discourage the resort to strikes or lockouts until legal methods have been tried. The statute should not confine arbitration to a public board, but should permit the parties to choose arbitrators if they prefer. There should be no provision to compel either side to abide by the decision. It is believed that a full and fair investigation of the facts will, in most cases, bring the parties into substantial agreement, while in other cases the result may be safely left to public opinion.

In conclusion, the Commission would recommend the establishment by all the States of labor bureaus or commissioners, who shall, besides their local duties as now defined, be charged with that of exchanging their statistics and reports, and of convening at least once a year in national conference for general consultation, which national conference should have power to submit directly to Congress its recommendations for such Federal legislation as a majority of the State commissioners may deem advisable, and shall also submit to all of the States, through the commissioner of each separate State, their recommendations for such uniform State statutes upon labor subjects as may seem wise and desirable.

JAMES H. KYLE, *Chairman.*
BOIES PENROSE.
WILLIAM LORIMER.
THEOBALD OTJEN.
A. L. HARRIS.
JOHN M. FARQUHAR.
EUGENE D. CONGER.
THOMAS W. PHILLIPS.
M. D. RATCHFORD.
JOHN L. KENNEDY.
ALBERT CLARKE.

We can not concur in the above report. Conditions, arising partly from climatic, partly from other causes, vary decidedly in the different and widely separated sections of our country. These conditions, coupled with the fact that manufacturing industries of different kinds have been recently and only yet partially established in certain States, render it both unjust and impracticable to attempt any uniform laws regulating labor in all the States, if labor and capital are to have their full and free development.

The inalienable right of private contract should be allowed to both laborer and employer, and the unwise limiting of the hours of work by law we believe to be fraught with danger. The future prosperity of this country as the leading manufacturing nation of the world demands the greatest freedom of contract between labor and capital.

ELLISON A. SMYTH.
CHARLES J. HARRIS.

I am of opinion that it would be unwise and unjust to endeavor to force uniformity of labor laws throughout the United States. The

length and the heat of the day are prime factors respecting the hours that may be appropriated to labor, and respecting the rules applicable to it, as well as to its cost. These things under such regulations as suit the climate, the community, and the conditions to be dealt with will work themselves out better under local self-government than under any iron-clad rule adopted by or suggested from a central power.

I therefore concur in the spirit of the views expressed on this subject by Messrs. Ellison A. Smyth and C. J. Harris.

JNO. W. DANIEL.

WASHINGTON, *January 20, 1902.*

Not having been a member of the Commission when its preliminary report was made, I take this method of giving my assent to the recommendations of the majority of the Commissioners. Could all of them be enacted into law the condition of labor in the United States would be vastly improved.

Where production and consumption run in parallel lines, it is evident that, if in one part of the country labor is employed under rules and customs less favorable than those maintained elsewhere, the employers in that part of the country will have an unfair advantage in competition with their business rivals. Hence, the demand for uniform laws in all the States seems wise and just. The machinery used being the same, the facilities of factory, transportation, and raw material being equal, the competition comes on the conditions under which the labor is employed. Agitation will not cease, and ought not to cease, until those who toil obtain full benefit of labor-saving and labor-assisting machinery, in a shorter workday, safety for life and limb in mine, mill, and factory, equal pay for equal work, whether done by man or woman, and in the education of the public schools, supplemented by special tuition in trade, textile, industrial, and technical schools. Along these lines the legislation of the States and the nation should constantly move until the highest possible standard shall be attained by which the supremacy of the producers in our land in all branches of industry shall be maintained, and the future destiny of the United States be fulfilled as the leader among the nations of the earth.

CHAS. H. LITCHMAN.

WASHINGTON, *January 20, 1902.*

We believe that the foregoing review of evidence as it stands is, for general application, too much in the nature of a theoretic argument in favor of the unrestricted and uncontrolled organization of special classes of labor, and mainly relates to part of the labor engaged in manufacturing, transportation, mining, and some occupations peculiar to large cities.

We apprehend that the theories, if attempted to be carried fully into practice, might lead to the development of powers in the hands of special combinations of labor which, by cooperation with the powers of special combinations of capital, could levy tribute upon the vast body of other labor and all consumers for the benefit of the capital and the labor so combined. Statutory laws in restraint of violence and of coercive acts against the rights and liberties of others should be maintained and enforced against those who are in organizations, as well as all other citizens alike.

Organizations of labor, when the members are intelligent and when controlled by good motives and good men, are very advantageous, and such organizations will have little or no occasion to be in any degree controlled by restraining laws.

Other organizations, where the degree of intelligence is not high, as in the case of many immigrants not long in the country, and not in sympathy with the personal liberty provided by our institutions, where the motives are sometimes bad and the leaders sometimes not good or wise men, are positively injurious, and it seems essential that those who are members of such organizations should be amenable to wholesome laws.

The most important factors influencing and constraining the betterment of the condition of working people we believe to be as follows:

(1) The provision of ample school facilities.

(2) Compulsory education.

(3) The maintenance under State laws of cooperative savings institutions, under such control and restrictions as to absolutely insure their safety, and, so as to make it easy for members, through these institutions, to build homes and pay for them by instalments, similar to the cooperative banks of Massachusetts.

(4) The establishment by the United States Government of postal savings banks.

(5) Liberal provision for the incorporation of labor organizations.

C. J. HARRIS.
D. A. TOMPKINS.

IMMIGRATION.

I. SOCIAL AND ECONOMIC EFFECTS.

IMMIGRATION STATISTICS.

The volume of immigration to this country has fluctuated between wide extremes at different periods. It first became important during the decades 1831–1840; and from 1851 to 1901 the number of immigrants each decade exceeded two millions. By far the largest immigration was in the decade 1881 to 1890, when the number of immigrants was larger than that of the two preceding decades together. The year 1882 marked the climax of the movement, when 768,992 immigrants came to our shores. With a slight abatement this large immigration continued until the crisis of 1893. During the succeeding years of depression, the number of immigrants fell off until the lowest point in recent years was reached in 1898, when the total number of immigrants was 217,786. The industrial prosperity which followed has brought again a notable increase, the number of arrivals in 1901 reaching 487,918, a number exceeded only by the arrivals of six of the twelve years between 1881 and 1892.

The absolute numbers of immigrants arriving, nowever, are not so significant as the proportion of immigrants each year to the total population. Making this comparison, it is seen that, while the earlier periods of large immigration show smaller absolute numbers than later periods, the proportion of arrivals to the total population is actually greater than in later periods. Thus, as will be seen from the following table, the 788,992 immigrants of 1882 numbered 150 to every 10,000 of the existing population, whereas the 427,833 immigrants of 1854 numbered 162 to every 10,000 of the then existing population. A large increase in absolute numbers does not by any means show a corresponding increase in the proportion to the total population, and the percentage of population for periods of low immigration has remained fairly constant throughout, while the absolute numbers for those periods have varied considerably. These considerations are brought out in a graphic way by the accompanying chart, showing by years the aggregate immigration and the number of immigrants to each 10,000 of the existing population.

Foreign immigration to the United States.

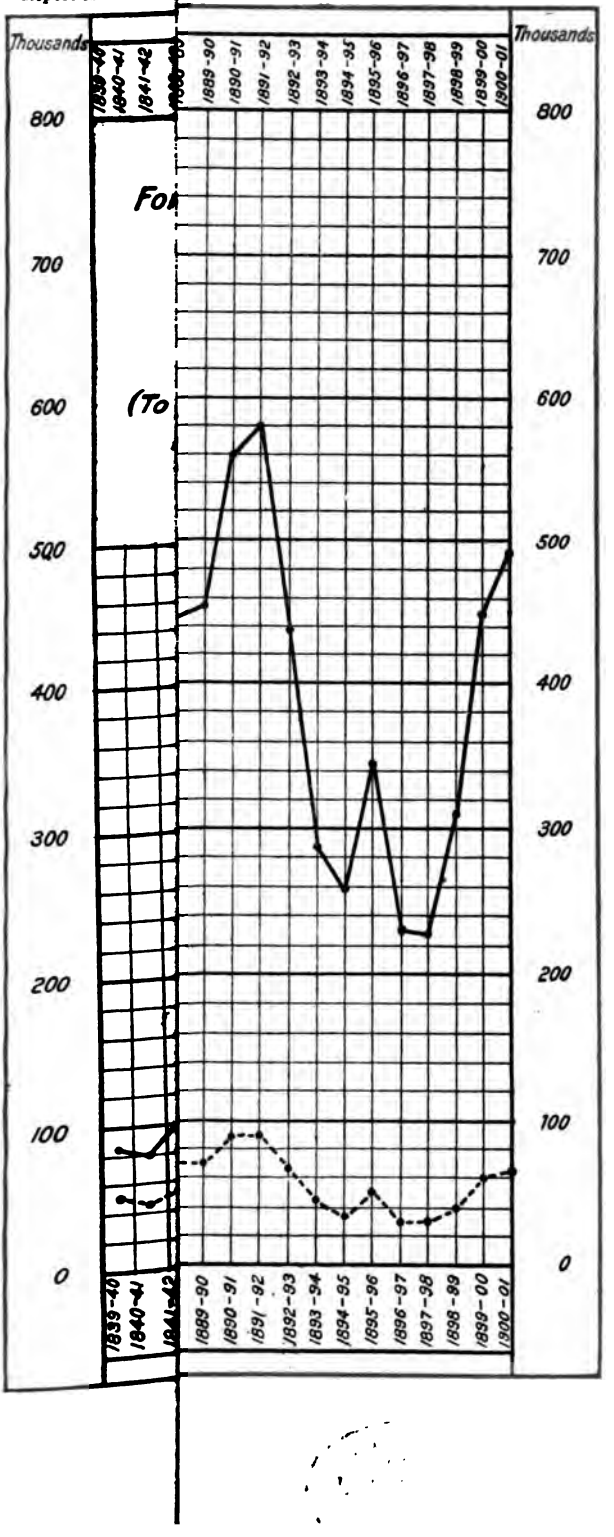
	Number of immigrants.	Number of immigrants to 10,000 population.[1]		Number of immigrants.	Number of immigrants to 10,000 population.[1]
Year ending Dec. 31—			Year ending June 30—Cont'd.		
1839	68,069	41	1871	321,350	81
1840	84,066	49	1872	404,806	99
1841	80,289	45	1873	459,803	110
1842	104,565	57	1874	313,339	73
Year ending Sept. 30—			1875	227,498	51
1844	78,615	40	1876	169,986	37
1845	114,371	57	1877	141,857	30
1846	154,416	75	1878	138,469	29
1847	234,968	111	1879	177,826	36
1848	226,527	108	1880	457,257	91
1849	297,024	132	1881	669,431	128
1850	369,980	134	1882	788,992	150
1851	379,466	158	1883	603,322	112
1852	371,603	149	1884	518,592	94
1853	368,645	143	1885	395,346	70
1854	427,833	162	1886	334,203	58
1855	200,827	73	1887	490,109	85
1856	195,587	69	1888	546,889	91
1857	246,945	85	1889	444,427	72
1858	119,501	40	1890	455,302	72
1859	118,616	35	1891	560,319	88
1860	150,237	47	1892	579,663	88
1861	89,724	28	1893	439,730	64
1862	89,007	27	1894	285,631	42
1863	174,524	52	1895	258,536	37
1864	193,195	57	1896	343,267	48
1865	247,453	71	1897	230,832	32
1866	314,917	88	1898	229,299	30
1867	310,965	86	1899	311,715	40
Year ending June 30—			1900	448,572	56
1869	352,768	93	1901	487,918	61
1870	387,203	100			

[1] Computation based on population as estimated in Reports of the Comptroller of the Currency. Report, 1900, pp. 301–302.

COUNTRIES FROM WHICH IMMIGRANTS COME.

More important than the changing volume of immigration is the changing character of the immigrants. If a line were drawn from north to south irregularly across the continent of Europe, it would be found that the countries of western Europe, including England, Scotland, Ireland, Wales, Germany, and the Scandinavian countries, furnished more than three-fourths of the immigrants from all countries prior to 1880, and that the countries of eastern Europe, including Italy, Austria-Hungary, Russia, and Poland, furnished less than 1 per cent of the immigration. On the other hand, in the fiscal year 1900–1901, just closed, western Europe furnished only one-fifth of the immigrants and eastern Europe furnished two-thirds. (See accompanying chart.)

The decade of 1881–1890 marks the turning point in this transition from western to eastern Europe. The number of Germans coming to our shores in that decade reached the enormous total of 1,452,970, and in 1 year, 1882, no less than 250,630. Their number declined to 17,111 in 1898, and the returning prosperity has served to increase them in 1901 to only 21,651. The Swedish and Norwegian immigration reached 94,000 in 1882, but fell to 17,000 in 1898, and has increased to 35,579 in 1901. The number of English who came to this country in 1882 numbered 82,394; in 1901 there were only 12,214.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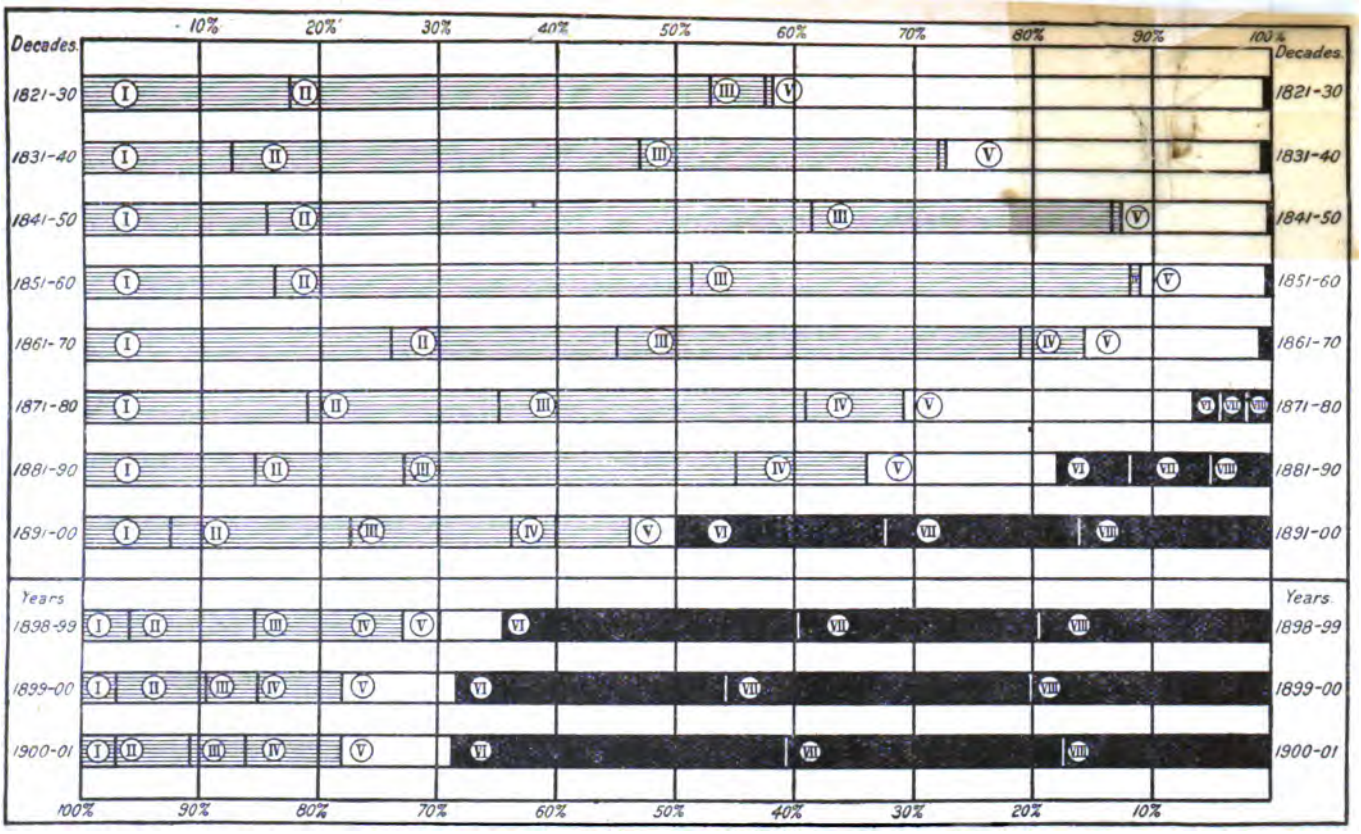

RELATIVE IMMIGRATION FROM WESTERN AND SOUTHEASTERN EUROPE.

I, England, Scotland, and Wales: II, Ireland; III, Germany; IV, Scandinavian countries; VI, Italy; VII, Austria-Hungary; VIII, Russia and Poland; V, all others.

(This chart is based upon the data given in report of Industrial Commission, Vol. XV, pp. 275–276.)

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The Irish immigration, which reached a total of 81,486 in the year 1883, fell to 25,000 in 1898, and rose in 1901 to 30,561. Altogether, these countries of western Europe which formerly furnished three-fourths of the immigrants furnished in 1901 only one-fifth of them.

On the other hand, the countries of southern and eastern Europe show a striking increase in emigration to America. Italy leads in this movement. With only about 12,000 immigrants in 1880 and 32,159 in 1882, the number increased in the year 1901 to the enormous aggregate of 135,996. The various races of Austria-Hungary, including Slovaks, Croatians, Poles, Magyars, and a few Germans, whose immigration in 1880 was only 17,000 and in 1882 was 29,150, in the year 1901 reached 113,390. Russian immigration, including Poles, Hebrews, and a small number of Russians proper, which numbered only 7,000 in 1880 and 21,590 in 1882, reached a total of 85,257 in 1901.

Considering the immigration in 1882, the highest point in the century, with the immigration in the past year, and including all the countries of Europe, we have the contrast shown in the following table: The total immigration from western Europe, which in 1882 was 563,174, was in 1901 only 116,215, a decline of four-fifths, while the immigration from southern and eastern Europe and Asiatic Turkey, which in 1882 was 83,637, was in 1901 353,391, an increase of fourfold. In 1882 western Europe furnished 87.1 per cent of the European immigration, and in 1901 24.7 per cent, while southern and eastern Europe and Asiatic Turkey furnished, in 1882, 12.9 per cent of the European immigration, and in 1901 75.3 per cent.

Immigration from Europe and Asiatic Turkey, by countries, 1882 and 1901.

	1882.	1901.
Total Europe and Asiatic Turkey	647,082	469,624
Great Britain and Ireland	179,423	45,546
Belgium	1,431	1,579
Denmark	11,618	3,655
France	6,003	3,150
Germany	250,630	21,651
Netherlands	9,517	2,349
Norway	29,101	12,248
Sweden	64,607	23,331
Switzerland	10,844	2,201
Total western Europe	563,174	116,215
Per cent	87.1	24.7
Italy	32,159	135,996
Portugal	42	4,165
Spain	378	592
Austria-Hungary	29,150	113,390
Russia	21,590	85,257
Greece	[1]73	5,910
Roumania	[1]77	7,155
Servia, Bulgaria, and Montenegro	.....	657
Turkey in Europe	[1]86	387
Turkey in Asia	82	5,782
Total southern and eastern Europe and Asiatic Turkey	83,637	353,391
Per cent	12.9	75.3
Europe not specified	271	18

[1] Figures are for 1883.

The foregoing table shows the changing character of immigration in the period of nineteen years from 1882 to 1901. The following table shows that the changes above indicated have been of very recent occurrence, and are going on at the present time at an increasing rate. This table is based on the records of immigration by races for the years 1899 and 1901, and shows both the absolute and the relative increase in this period of two years. The year 1899 is selected, since this is the first year for which the immigration bureau presents statistics by races as well as by countries. It will be seen that, while the grand total of immigration increased from 311,715 in 1899 to 487,918 in 1901, an absolute increase of 176,203 immigrants and a relative increase of 56.53 per cent, the races of northern and western Europe increased in numbers 33,879, or 31.15 per cent, and those from southern and eastern Europe and Asiatic Turkey increased 139,886, or 71.93 per cent. The greatest increase in absolute numbers is that of the South Italians, whose immigration in 1899 was 65,639, and in 1901 was 115,704, an increase of 50,065, equivalent to 76.28 per cent. Other leading races from eastern Europe in the order of their increase in number of immigrants are the Hebrews, 20,863; Poles, 15,151; Slovaks, 13,505; Croatians and Slovenians, 2,296, and North Italians, 9,012. The largest increase among the races from northern Europe is found among the Scandinavians, 17,028, and the second in order of increase are the Germans, with 8,110 increase.

The largest relative increase appears in the case of the Bulgarians, Montenegrins, and Servians, a class of people who have not hitherto been coming to this country, but whose increase in the last two years indicates the probable further extension of the recruiting area of immigration toward the east. The Ruthenians coming from eastern Hungary show an increase of 3,888, or 277.7 per cent; the Greeks show an increase of 3,524, or 147.1 per cent; the Armenians, 1,181, or 175.2 per cent. The increase in the number of Turks, 385.7 per cent, is not significant, since these are mainly merchants.

Immigration, by races, 1899 and 1901.

Race.	1899.	1901.	Increase.	Decrease.	Per cent increase.	Per cent decrease.
English	10,712	13,488	2,776	.....	25.91	.....
Scotch	1,752	2,004	252	.....	14.33	.....
Welsh	1,359	674	.....	685	.....	50.40
Irish	32,345	30,404	.....	1,941	.....	6
Scandinavian	23,249	40,277	17,028	.....	73.24	.....
Finnish	6,097	9,999	3,902	.....	63.99	.....
German	26,632	34,742	8,110	.....	30.45	.....
Bohemian and Moravian	2,526	3,766	1,240	.....	49.09	.....
Dutch and Flemish	1,860	3,299	1,439	.....	77.37	.....
French	2,278	4,036	1,758	.....	77.17	.....
Total northwestern Europeans	108,810	142,689	.....	.....	.....	.....
Net increase	.....	.....	33,879	.....	31.15	.....
Italian (north)	13,091	22,103	9,012	.....	68.84	.....
Italian (south)	65,639	115,704	50,065	.....	76.28	.....
Portuguese (Azores and Cape Verde Islands)	2,096	4,176	2,080	.....	99.24	.....

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Immigration, by races, 1899 and 1901—Continued.

Race.	1899.	1901.	Increase.	Decrease.	Per cent increase.	Per cent decrease.
anish	996	1,202				
lish	28,466	43,617	15,151		53.22	
ovak	15,838	29,343	13,505		85.27	
roatian and Slovenian	8,632	17,928	9,296		107.68	
agyar	4,900	13,311	8,411		171.65	
uthenian	1,400	5,288	3,888		277.71	
lebrew	37,415	58,098	20,683		55.28	
ithuanian	6,858	8,815	1,957		28.53	
ussian	1,774	690		1,092		62.51
reek	2,395	5,919	3,524		147.14	
rmenian	674	1,855	1,181		175.22	
yrian	3,708	4,064	356		96	
ulgarian, Montenegrin, and Servian	94	611	517		550	
almatian, Bosnian, and Herzogovinian	367	732	365		99.46	
oumanian	96	761	665		69.58	
urkish	28	136	108		385.71	
Total southern and eastern European and Asiatic Turkey	194,467	334,353				
Net increase			139,886		71.93	
Chinese	1,638	2,452	814		49.69	
Japanese	3,395	5,249	1,854		54.61	
Cuban	1,374	1,622	248		18.05	
Mexican	163	350	187		114.72	
Spanish-American[1]	160	200	40		25	
Net increase	6,730	9,873	3,143		46.70	
All other races	1,708	1,003		705	41.28	
Grand total	311,715	487,918	176,203		56.53	

[1] Figures for 1899 equal South America and Central America combined. See Reports Commissioner-General of Immigration.

The accompanying map shows in some detail whence this newer immigration is drawn. Each black dot represents 250 emigrants from the general locality indicated for the year ending June 30, 1900. Three regions of large emigration from comparatively small districts will be noted—southern Italy, western Ireland, and northeastern Austria-Hungary. The races coming from the thickly covered Austrian district (embracing Galicia and northern Hungary) are Poles, Ruthenians, Slovaks, and Jews. The large Jewish emigration from Russia is seen to be derived from a widely extended territory. Far to the east are to be observed the districts from which the German-Russians, so numerous in some of the western States, are drawn. The map also shows the principal collecting points for immigrants and the main and subordinate lines of transportation followed by them.

The changing character of immigration appears in several ways—first in illiteracy. Of those who come from western Europe, only 3 to 6 per cent above 14 years of age are able to read and write, while of those who come from southern and eastern Europe the illiterates are 23 per cent to 55 per cent. This subject is more fully discussed on page 1001. Again, illiteracy corresponds closely with poverty. While the immigrants from different countries of western Europe bring an average of $25 to $40 per head, those from the countries of eastern and southern Europe bring $8 to $10 per head.[1]

[1] Reports Industrial Commission, Vol. XV, p. 284.

Testimony as to the tendency of the foreign born toward criminality, pauperism, insanity, and idiocy, and the consequent burden upon the public expenditure, has been offered before the commission, and a brief examination of the census statistics of 1890 has been undertaken. If due account be taken of the fact that the proportion of foreigners of adult age is greater than the proportion of native born of adult age, it follows that, according to the census statistics of 1890, their proportion of prisoners is not greater than the proportion furnished by native-born whites.[1]

This would probably also be true of the insane and the paupers were it not that foreign governments and charities for so many years assisted these classes to emigrate, and that even now the immigration restriction of this country is defective owing to the back-door entrance through Canada. On the other hand, the second generation, i. e., the native children of foreign parents, furnish the largest proportion of commitments and prisoners of all race elements in the population. This is owing to the injurious influences of city life, where the children learn to look down upon their immigrant parents and are able very early to break away from their discipline. The same is not true of the children of immigrants who have settled in rural districts.

EFFECT ON WAGES AND EMPLOYMENT.

In considering the effects of immigration on wages and employment there are two aspects of the question. First, it is alleged that immigration causes an oversupply of labor, and second, that it displaces higher standards of living by lower standards of living. These two alleged causes are separate and distinct and should be so considered. As regards the alleged oversupply of labor, leaving out of account lower standards of living, the question may be compared with the probable effect on wages and unemployment had the growth of population during the past 50 years occurred wholly by natural increase of the American stock already in the country.

Whether the natural and rapid increase of population, either by native births or by immigration, would cause an oversupply of labor depends upon various factors, and it is impossible to examine the immigration question itself without considering the conflict and cooperation of these other causes. Some of them tend at the same time to depress wages and others to resist the depression. The leading causes affecting the problem are the alternating cycles of business prosperity and depression, the introduction of machinery and subdivision of labor, the competition of women and children, the country competition of native labor, and labor organizations.

[1] Reports Industrial Commission, Vol. XV, pp. 285–289.

It is owing to the mingling of these many factors that it is impossible to present a statistical exhibit that will show the effect of immigration on wages. This will appear after a brief review of the several factors. A natural increase of population, if distributed equally through all occupations, provided the natural resources of the country have not been exhausted, creates in one occupation a demand for the labor of the new arrivals in all other occupations, and this reciprocal demand of labor for the product of other labor is the very basis of productive industry. Whether it is possible for this to continue indefinitely depends upon the advance in scientific control over the natural resources of the country, as shown in new machinery and new methods of business, and in the alternating cycles of prosperity and depression. Business prosperity is really, or at least is always attended by, the opening up of new resources for investment of new capital. Providing this expansion occurs sufficiently fast, there is no overcrowding of the labor market by increase in the number of laborers. The new resources and new investments demand new labor, and if the expansion is strong enough the new labor as well as the existing labor may secure advances in wages, though not necessarily as great an advance as would have been secured if the supply of labor had been smaller.

RELATION OF IMMIGRATION TO PROSPERITY AND DEPRESSION.

Here arises a consideration of the greatest importance regarding the effects of immigration on wages and on the general conditions of business. A period of business activity is marked by a general rise in the prices of commodities and an increase in the volume of production. This brings an increase in the amount of employment for labor, but not a corresponding increase in the daily rates of wages. For example, when, during the years 1897 to 1900, the average wholesale prices of 66 staple articles, as shown by the table on p. 730, rose 13 per cent, it is found that daily wages rose only 4½ per cent. A similar difference in the movement of prices and wages has been true of all preceding periods of business improvement. Daily wages do not generally rise as rapidly as prices. Again, in a period of depression daily wages do not fall as rapidly as the fall in prices, but, since there is a decrease in the volume of production, there is a decrease in the amount of employment. The part played by immigration in these movements of wages is significant. From the preceding table and chart it will be noticed that during a period of depression and falling prices the number of immigrants greatly declines, and in a period of prosperity and rising prices the number of immigrants greatly increases.

In 1882, at the culmination of a period of prosperity, immigration reached 788,992, and fell to 334,203 in 1886. Again in 1892 it rose to 579,663, and fell to 229,299 in 1897, and finally in 1901 rose again to 497,918. Now, the ability of wage-earners to share in the increased

prosperity of a period of business activity depends mainly upon the supply of labor. The ordinary increase in population from births does not fluctuate with the changes in depression and prosperity. Doubtless there are more marriages when laborers are employed than when they are partly out of employment, but this does not affect the increase in numbers of the actual working population. But immigration operates differently. The great increase in the number of immigrants just at the time when employment is increasing, many of them expecting to return to their native land, furnishes an artificial supply of labor, and prevents those already at hand from demanding and securing that increase in wages which they could otherwise obtain. This, in turn, has serious ulterior effects on the duration of the period of prosperity. Employers are able both to expand more greatly their production for the immediate emergency, and to secure in the form of profits a greater share of the product than they would be able to do without this artificial increase of cheap labor. The result is a quick overproduction of commodities, owing to the inability of the working population, when prices have risen more than wages, to purchase and consume the same proportion of their product as that to which they have been accustomed.

These considerations lead to an important conclusion regarding the policy of restricting the number of immigrants as a protection to American labor. In times of business prosperity the claim is made by many large employers of labor that the supply of labor is inadequate for the growing demands of production, and therefore at such a time restrictions on immigration should not be imposed. Representatives of workmen themselves are less emphatic in their complaints where business seems to be furnishing abundant employment. But if immigration prevents American labor from advancing as rapidly as American capital in a period of prosperity, then restriction is needed at that time just as much, though not as plainly, as in a period of depression.

WAGES AND STANDARD OF LIVING.

The foregoing considerations are materially emphasized when we come to consider the lower standards of living brought by the immigrants from abroad. Here we meet a different problem. It appears in general that wages in the United States are very much higher than in European countries. In making a comparison of this sort, it is proper to compare wages of agricultural labor in Europe with wages of city labor in America, since immigration is not merely the movement of population from Europe to America, but is also largely or chiefly the movement of population from the country to the city.

It is generally claimed by immigrants that their wages in American cities are four to five times as high in money as the wages in the rural districts whence they came. It is asserted, however, that 30 to 40 cents

upon the Continent of Europe will purchase as much in the way of the necessities of life as $1 in the United States. If this be so, then the Italian, with wages five times as high and cost of living three times as high as at home, can live on three-fifths of the wages received by his American competitor. But this comparison omits an element which is difficult of measurement, namely, the necessary change in the standard of living in order to work in America. The Italian, who lives largely on vegetables in Italy, can not do the work of American laborers unless he has meat and bread. He is not merely ignorant of American methods; he is also unused to the American intensity of exertion. He must necessarily, therefore, begin at a low rate of pay or not work at all.[1]

This is one reason why in those occupations controlled by strong labor organizations there is less complaint against European immigrants, provided they do not work below the scale of wages prescribed by the union, although the testimony before the Industrial Commission of all representatives of labor is uniformly in favor of further and more effective restriction of immigration. With their inferior exertion they are not profitable at the same wages, and hence do not so actively compete. On the other hand, in the unorganized trades where there is no scale of wages and where the employer makes an individual bargain with each workman, a place can be found for immigrants at very low pay. The employer is not usually willing to resort to such labor, preferring to pay higher wages to skilled workmen, but he often finds their presence useful in order temporarily to take the places of skilled workmen who go out on a strike, or to hold as a club to threaten those who demand higher pay. Here we touch a striking feature of American labor conditions. Where divergent nationalities have been introduced and the former high-standard labor has been displaced, cut-throat competition of the severest kind depresses wages year after year until finally the point is reached where the increased exertion of American methods sets a limit to further depression, since at least a minimum wage is required in order to provide merely the necessary food and shelter.

Even though wages be not reduced to the point reached in Europe, yet the amount of exertion may have been steadily increased until the former wages no longer furnish the vital energy required. At such a point the newcomers are ready to drop all questions except those of food, shelter, and rest, and are ready to organize, as was done by the bituminous coal miners in 1897, in order to secure the needed subsistence for the continuance of their daily work. In this way the maintenance of a standard of living is chiefly a problem of labor organization.

EFFECT OF DISPLACEMENT OF LABOR BY IMMIGRANTS.

There is another effect introduced by immigration different from that which would proceed from a natural increase in population. This

[1] Reports Industrial Commission, Vol. XV, p. 310.

is the unequal distribution of immigrants in the several occupations and localities. From unskilled and unorganized occupations and from the Canadian border come more urgent complaints of the depressing effect of foreign-born competition than from elsewhere. Certain unions, such as glass blowers, charge an initiation fee higher for aliens than for citizens. This and various other reasons have caused the immigrants to crowd with concentrated effect upon the unprotected occupations like those of common labor, coal mining, clothing, and textile manufactures. In these trades there has been overcrowding and displacement of native workmen, or of earlier immigrants, and reduction of wages without directly depressing wages in other employments.

The displaced classes take two different courses. Some of them fall in the moral scale and increase the number of hoodlums and tramps. Others seek other occupations, or become the foremen and employers of immigrants where a higher standard can be maintained. It may be said on this account that the fate of the displaced classes turns upon the general prosperity of the country, since in time of prosperity the upward transition is comparatively easy and in times of depression exceedingly difficult. But at this point it should be noted that the method by which the original American stock or the earlier immigrants are able to rise above the new immigrants who displace them is itself open to objection. It consists in that restriction of numbers, through late marriages and smaller families, by which the pressure of competition is lessened.

In this way the original stock and the earlier immigrant stock from western Europe, though rising in the scale, becomes less productive and proportionately smaller as the years go by. For this reason it was contended by the late Francis A. Walker, Superintendent of the Ninth and Tenth censuses, that from the time when immigration first assumed large proportions it has amounted, not to a reenforcement of our population, but to a replacement of native by foreign stock.[1]

LABOR ORGANIZATIONS AND IMMIGRANTS.

As already suggested, the leading influence which, at the present time, resists the depression of wages is labor organization. This appears under two somewhat different phases: First, in those strong trade bodies based upon skill, which, like the glass blowers and others, have forced the immigrant to betake himself to other lines of less resistance, and, second, in those occupations of less skill or more machinery, where, in the years already passed, the immigrant has gained control, but has lately established labor organizations. In either of these cases the menace of immigration consists, first, in those workmen who are imported from abroad under contract or by solicitation to take the places of organized labor at times of strike

[1] Reports Industrial Commission, Vol. XV, p. 277.

or lockout. This is the menace attempted to be overcome by the alien contract labor laws.

Secondly, in the steady immigration of poor but hard-working people who are unfamiliar with the traditions and customs of organization, unaccustomed to the rules and the self-control which it imposes, and incapable of learning the same through their ignorance of the language, and who are, moreover, forced by their poverty to work for low wages, and by their lack of friends to work with docility and desperate energy for him who first gives them a job. This is by far the main characteristic of immigration at the present time, as respects labor organizations.

It is this constant influx of immigrants into a trade, as in the clothing trade, that handicaps the educational work of organization almost as rapidly as it is advanced. It requires two or three years for immigrants to be brought to a sense of the need of organization and to develop the necessary ability to promote it, but by that time an additional inroad of immigrants has gained a decisive influence in the trade. This is one of the reasons why, in the mine workers' organization, the State of Illinois, being more remote from the impact of European immigration, is much better organized than the State of Pennsylvania. Whatever else may be said about immigration, it certainly presents a most serious problem for labor organization.

In no country have labor unions been confronted by a greater multitude of disintegrating forces than in the United States, and these are based directly on immigration. We have in the same competitive field different races, languages, and religions. With all these differences it is an easy matter for foremen to play the working people one against the other. Often nothing short of actual want and starvation is adequate to wipe out these differences and to bring these divergent races together on the simple economic basis of labor organization. This has been demonstrated among the coal miners, the clothing workers, the textile workers, and others. These trades furnish striking evidence that the influx of immigrants with low standards of living may become so large and constant as to overcome the native powers of assimilation and to reduce permanently the quality of the population.

The problem of mixed nationalities has brought about one novelty in the method of organization in some of the American labor unions compared with those of other countries, namely, branch organizations based on race. These branches, each electing its own race leader, form a central council or representative body through their leaders, and it is this council which is the source of legislation and negotiation for all of the nationalities in the union.

MACHINERY AND DIVISION OF LABOR.

The remarkable development of machinery and division of labor in the United States is closely connected with immigration. From the

earliest beginning of modern industry in all countries, both skilled and unskilled laborers have resisted the introduction of machinery as hostile to their interests. In this they have, to a large extent, succeeded in England and even in Germany, but in America, during the past 20 years, with its mixed races and weak organizations, such obstacles as have been imposed against new machinery and the division of labor have been easily broken down. When labor-saving machinery is once introduced and the unskilled men can do the work of the skilled, it is largely the immigrant who secures employment; and the old-line trade unionist, in order to preserve for himself the opportunity to work, is compelled to drop his objection to machinery.

Machinery operates often to conceal the effects of immigration, and at the same time to furnish an opening for the employment of the immigrant. In such a case the displacement of well-paid labor by ill-paid labor is a means for introducing continuous successions of lower and lower standards of living, as in the cotton textile industry, where the native American has been displaced successively by the English, Irish, the French Canadian, the Armenian, and the Syrian. Were machinery to be considered as strictly an economic force, then the labor employed to operate the machinery would receive the same wages as the skilled labor which it displaces. This has actually been the case with the printers, whose wages are even better with the typesetting machine than formerly when setting type by hand, and at the same time the cost of the work to the employer has been greatly reduced. But where machinery, largely through the presence of unorganized immigrant labor, is used as a means of increasing permanently the proportion of low-standard population it becomes not merely an economy, but a social disadvantage.

OTHER INFLUENCES AFFECTING WAGES.

The competition of women and children is another factor which operates in the same trades and with the same tendency as immigration itself. This competition is necessarily limited in extent, since women are employed usually only for the 6 or 10 years preceding marriage, and they are unable to maintain the speed and endurance required in modern machine production. At the same time it is noticeable that where women have entered factory production they are usually the wives and daughters of immigrants. This is a secondary and highly important phase of immigration.

Another factor, which in many occupations obscures the effect of immigration by cooperating with it to reduce wages, is country competition. The cost of living in the country being so much less than in cities, it follows that American labor which predominates in the country districts is often able to compete with the immigrant labor of the city. Even native labor in some sections, as in the South, has a

lower standard of living than immigrant labor, and Southern competition prevents the immigrant textile workers of New England from improving their condition. An analogous situation is found in the mining industry in those new and richer mines of southern Illinois and West Virginia, where American born farmers and laborers at low wages present a more serious difficulty to the organization of labor than the presence of the immigrants themselves. Country competition of native labor is one of the causes which must be considered in any attempt to measure the effect of immigration on wages and employment.

Taking into account the foregoing factors, it is evident that the effect of immigration on wages as an isolated cause can not be shown in a satisfactory way by statistics; yet the general conclusion is inevitable that while a moderate flow of immigration may be assimilated without depressing effects, a rapid influx of immigrants with low standards of living, crowding into the cities and into the less skilled occupations, creates an unfair competition with those already here, intensifies the effects of other depressing causes, and weakens the organization of the working people, by which they hope materially to improve their earnings.

Holding this to be true, and holding also that it is necessary, not only in behalf of the working people, but also in behalf of the citizenship of the United States, that the standard of living in no occupation should be permanently depressed, we are led to inquire whether the menace of immigration can be counteracted by a better distribution of immigrants throughout the country, especially in agriculture, or whether it is necessary to resort to further restrictions upon the admission of foreigners.

II. AGRICULTURAL DISTRIBUTION OF IMMIGRANTS.

TENDENCY OF FOREIGN-BORN TOWARD CITIES.

Several witnesses before the Industrial Commission have emphasized as a leading remedy for such consequences of immigration as seem to be injurious the undertaking of definite measures for encouraging immigrants to move into the country districts and to follow the industry of agriculture. So inviting seem the proposals, and so urgent the need of a movement of this kind, that the Industrial Commission has made a special investigation of the opportunities for immigrants in the agricultural districts, which is published at length in the volume on immigration.[1]

The congestion of the foreign born in American cities is brought

[1] Reports Industrial Commission, Vol. XV, pp. 492–646.

out strikingly in the summary of the census of 1890, contained also in the volume on immigration. While the foreign born constitute only 14.4 per cent of the total population of our country, they constitute more than twice as large a proportion—viz, 29.18 per cent—of the population of cities over 25,000. On the other hand, in rural districts, only a little over one-tenth of the total number of inhabitants is of foreign birth. In three cities—New York, Chicago, and San Francisco—the foreign-born population exceeds 40 per cent. Eighteen of the 28 great cities have more than one-fourth of their population foreign born.

The consequences of this congestion of the foreign born in cities presents serious problems, not only in industrial and social life but also in municipal government. Their natural clannishness in many cases, their ignorance of the English language, and their unfamiliarity with American institutions make the municipal problems of the United States especially trying; and, on the other hand, the small proportions in the rural districts indicate directly a possible remedy.

REASONS FOR TENDENCY TOWARD CITIES.

The reasons for the tendency of the foreign born to cities are not far to seek. They are found, first, in the general movement of all modern industrial peoples toward urban life—a movement quite characteristic of the American people themselves. But this movement is still more striking in the case of the immigrant, since the majority of those who come to this country have been farmers or farm laborers in their European homes, and even those who state their occupation as simply laborers are, to a large extent, farm laborers. Coming to a strange country, they bring with them the memories of the hardships and oppressions of rural life from which they are struggling to escape. They find in American cities employment directly after arrival, or they find the agencies that conduct them to the large works of construction and internal improvement carried on by contractors and corporations in the interior.

They bring with them the European custom of living in villages and going out in the daytime to the farms, even to a considerable distance, for their agricultural work. In this country they are confronted by the isolation of the farmer who lives, not in these farm colonies, but on his own separate homestead. They lack the money necessary to pay railroad fare or to purchase a small farm, and are compelled to seek immediate employment. In the cities they feel greater confidence in view of possible misfortune, because they can fall back on friends or on public charities—hospitals and the like. They are ignorant of the native language, and they crave the society of their own race. Moreover, the money wages of farm laborers are very low compared with wages in the cities or on public works, and where, as is the case

with immigrants, the laborer is anxious not so much for the good board and lodging which are a part of his wages in the country as for the money which he can save from his earnings by a low standard of living, he prefers the immediate returns of city employment.

Under these circumstances it can not be expected that the green immigrant shall seek a rural life in America. The most that can be expected is that, after having through industry and thrift saved a small competence from his earnings in urban and allied employments, and having learned the English language and American methods of business, he may be induced to see the greater advantages of an independent livelihood in the country. Even at the present time those nationalities which incline to farm labor, like the Scandinavians, have but little difficulty in finding agricultural employment through friends and employment agencies. These are the nationalities which do not congest in cities and for whom there is no problem of agricultural distribution. Other nationalities, like the Italians, whose presence in the cities in large numbers is a serious problem, are not sought by farmers.

OPPORTUNITIES IN AGRICULTURE.

There is abundant evidence that the small farmer and farm laborer from Europe, when once he has transfered himself to American farming, becomes remarkably successful. Comparing the condition of those Italians and Bohemians who have become farm proprietors in the newer sections, or in the South, or on abandoned farms, with the conditions of their own races in the cities, the superiority of the farm life is unquestionable. Not only in health and independence is their condition improved, but, above all, the outlook for their children is brighter. As already stated, the children of immigrants in cities are insubordinate and are led into excesses, and on this account they furnish a larger proportion of offenders than any other class of the population. On the other hand, in the farming districts they develop into self-reliant, industrious, and successful citizens.

The foreign farmer also is peculiarly fitted to develop forms of agriculture which in America are neglected, viz, diversified and intensive farming. Coming from a crowded country, where the land is exceedingly valuable, he brings with him the careful methods which restore the fertility of the soil at the same time that they produce large crops. It can not be said that the foreigner as a farmer is more progressive than the American. Indeed, perhaps, he is less so, since he contents himself in substituting hard work and long hours for the machinery in which the American invests. Nor is he so readily open to the instruction to be derived from agricultural publications, the work of experiment stations, and farmers's institutes, which have spread their

and nearer markets, and whatever other advantages are necessary to foster this great branch of industry.

At the same time there are in existence certain governmental agencies which might readily be directed toward specific measures in inaugurating a movement to the country. Anything resembling financial aid is out of the question, since it tends to suppress those qualities in the future farmer upon which his success depends. All that can possibly be undertaken in a governmental way is of the character of an educational effort or of an intelligence bureau. It is, for example, desirable for the benefit of the working people in general that there be a systematic and frequent report on conditions of employment and wages in all parts of the country and in all industries. This properly belongs to the Department of Labor, in the form of a monthly bulletin like those which are now published by similar departments in Massachusetts, Great Britain, New Zealand, and elsewhere. While the necessary corps of correspondents in the different sections of the country and the publication of a bulletin for free distribution would involve much expense, yet the results would certainly be commensurate. A bulletin of this character, furnished to libraries, periodicals, employment agencies, trade unions, etc., would benefit the working people in general, and the immigrant laborer in company with the others.

A staff of correspondents already exists for the application of this measure to agricultural employment. In every township and county of agricultural importance the official crop reporters furnish to the Agricultural Department at Washington their estimates of crop conditions. They are in a position to furnish at the same time statements regarding the opportunities for labor and the wages paid.

An example of what might be done through a publication of this kind may be gathered from the tables prepared for the Industrial Commission in the volume on immigration, wherein are shown for each State the kinds of farming, the per cent of laborers employed throughout the year, the opportunities for married men as farm laborers, the opportunities for women and children, the prevailing rates of wages, and the increase or decrease in wages in recent years. A monthly bulletin containing information of this character, corrected for each issue, would seem to be a proper measure of governmental interest without at the same time incurring the criticism of paternalism.

The foregoing recommendation applies to wage-earners for whom, as already stated, the agricultural demand is limited. Not until more diversified farming, and that which provides employment in the winter, is developed will this feature yield its principal advantages.

More important as a means of cooperating with a movement from the city to the country is such assistance as could be given to those who have saved from their earnings in the city and are seeking profit-

able openings in the country. For the aid of this class of home-seekers there exists at the present time only advertising agencies of land companies and railroad companies. The home-seeker has no authentic knowledge that the statements made by these solicitors represent the actual conditions to which he is invited to subject himself. Unquestionably there are millions of acres of cheap lands throughout the country which would prove attractive to this class of intending farmers, provided they could insure themselves of the truth of the representations.

It has been proposed that a bureau be established at Ellis Island for the information of immigrants relative to the resources and opportunities of various parts of the country. While such a bureau would probably be of no value whatever, for reasons above stated, it is likely that a Government exhibit, under the auspices of the Department of Agriculture and the Department of Labor, located in the leading cities, under charge of the proper officials, displaying the resources and authenticating the experiences of pioneers, would prove of great value.

Certain railway companies occupy a somewhat similar position in their efforts to attract immigration to the lands of their respective territories. The railroad companies may not have lands of their own to sell, but they act as agents for such landowners as care to cut up their holdings and sell them in parcels at the moderate prices approved by the land and industrial agents of the railroads. State boards of agriculture and of immigration exist partly for the same purpose in a half dozen States, and they are especially active in the South. Neither railroads nor State boards are as yet equipped to reach a large number of prospective purchasers, but with a Government bureau like the one suggested, whereby their representations could be authenticated by officials of the Agricultural Department, they would find it to their advantage to make use of the bureau, and could thereby expand widely the range of their solicitations.

The location of a bureau of this kind in New York City at some central spot would prove of special value to those immigrants who remain at that port for a time after landing. Each bureau, in whatever city, should be located in that portion of the city where the working people reside, and not in the uptown quarters. Among the features which would prove particularly useful would be the catalogues of untilled farms such as are now issued by the Boards of Agriculture of Massachusetts, Connecticut, Rhode Island, and New Hampshire; also the reports of the Immigration and Agricultural Commissions of States like North Carolina, Maryland, and others, which are making efforts to attract immigrants. These catalogues could be printed in various languages, and could be accompanied by illustrations, wall maps, and such other means of displaying resources

of localities as the respective authorities should find useful. The bureau would fill the office of a permanent industrial and agricultural exposition in the leading cities, and would be, as it were, analogous to the county fair of agricultural districts, through which different portions of the industrial community can exchange their experiences and present their respective attractions. The authentications of the several representations from different sections and interested advertisers would be made through the thousands of agents of the Department of Agriculture, who are already located in every township of agricultural importance and who are the leading and best-informed citizens of their section. The chief of each bureau would necessarily be an officer of high standing, and his appointment should be of the same grade as that of the postmasters of leading cities or the collectors of customs. With the cooperation of the Commissioners of Immigration immigrants would be directed to these bureaus for such information as they desire regarding opportunities for employment and settlement. The bulletins of employment, suggested in a preceding paragraph, would be distributed at this center, and such employment agencies as should be authorized could find here their offices. It is believed that in this way various nationalities of immigrants, seeing that agriculture in the United States offers a dignified position and a prosperous future, would find their old instincts for agriculture aroused and would turn again under new and free conditions to that industry which in their former home was their means of livelihood.

The foregoing suggestions for educational efforts on the part of the Federal Government toward increasing the movement from cities to the agricultural sections are based, as already stated, on the idea that an effort of this kind would prove of advantage to all classes in the cities, and not merely to immigrants. But it must be noted that there are reasons to believe that whatever success may attend a project for agriculturalizing the immigrants will result simply in attracting more immigrants to this country. The bulk of immigration at the present time is induced by the letters and prepaid transportation of friends already here. The large influx in times of prosperity and the falling off in times of depression are simply the reflection of the opportunities for employment. If the congestion in the cities is relieved by removing the older immigrants, or if the Government finds new employment for fresh immigrants in the country, the word will be carried at once by thousands of letters to Europe and Asia.

Immigration will increase proportionately to the new opportunities, just as it increases when prosperity follows depression. If agricultural distribution be undertaken as a means of relieving the pressure of immigrants in the congested cities and occupations, it will fail of its purpose, because the populations of Europe are competent to fill whatever new openings may be created. Agricultural distribution is

desirable on its own account and in the interest of the entire people, but unless added restrictions on immigration are enacted it will probably result only in a more rapid displacement of older immigrants by newcomers in the congested occupations.

III. IMMIGRATION LEGISLATION.

A discussion of the legislation necessary to restrict immigration within desirable limits must consider, first, the amendments to existing laws which are needed to make them more effective on the principles already laid down, and, second, the addition of new restrictions not contemplated in existing laws.

GENERAL REVISION AND CODIFICATION OF EXISTING LAWS.

Evidence taken by the Industrial Commission demonstrates conclusively that the existing laws restricting immigration are weak at many points, and that they furnish many loopholes for evasion. The laws have been enacted at various times within a period of twenty-five years, and there has never been a codification. There are, therefore, overlappings, inconsistencies, ambiguities, and conflicts of authority. At some points these weaknesses can be remedied without introducing any new principles of exclusion, while at others it might be held that the remedies proposed are really innovations. It is certain, however, that a number of administrative improvements could be introduced which would simplify the operations of the law and make more effective the exclusion of those classes already intended to be excluded. Officials and representatives of the Bureau of Immigration have called the attention of the Industrial Commission to various improvements which might be made in this direction. Experience has shown that the wording is often such as to render the plain intent of the law ineffective. For example, it is pointed out that, according to the act of 1891 excluding "persons suffering from a loathsome or a dangerous contagious disease," the Department can not exclude a person suffering from a loathsome disease without at the same time proving that it is contagious. Consequently, it is recommended that the word "from" be inserted after the words "loathsome or," so that it should read "persons suffering from a loathsome or from a dangerous contagious disease." Persons afflicted with these diseases and belonging to the European beggar class are coming here under conditions which prevent the authorities from sustaining the contention that they are likely to become public charges, whereas they could be excluded on the ground of a loathsome, though not necessarily contagious, disease.

Again, the law of 1891 excludes "all idiots, insane persons, pau-

pers, or persons likely to become a public charge." The word "or," between paupers and persons, is interpreted by legal authority as rendering it illegal to exclude idiots and insane persons *per se*, the only ground on which they can be deported being that they are likely to become a public charge. It is therefore recommended that the word "or" be omitted, so that there will be no question as to the authority to deport idiots and insane persons, not merely on the ground of their becoming public charges, but on the ground of their idiocy and insanity.

Again, section 10 of the law of 1891 requires the deportation immediately of all aliens who may unlawfully come to the United States, and under this clause it has been construed that a minor child, the member of a large family, shall be deported immediately, even though no ground can be found on which to prevent the landing of the other members of the family; and the law does not give power to deport the mother or guardian to take care of the child. It is recommended, therefore, that in such cases the alien minor child, otherwise entitled to land, but who is suffering from a loathsome or contagious disease of a curable character, should be detained in hospital, at the expense of the owner or owners of the vessel or of the transportation company, until such child shall have recovered from said disease.

These are only a few of the proposed amendments of an administrative character, but enough to plainly indicate the need of a codification and revision of the immigration laws as they stand with reference to perfecting their administrative details and correcting ambiguous or imperfect wording. In order to present to the Congress a carefully considered codification and revision of the immigration laws, especially in relation to their administration, the Industrial Commission has held a series of conferences with immigration officials, and has drafted a bill which is submitted on pages 1013–1020.

IMMIGRATION THROUGH CANADA.

Undoubtedly the most serious loophole in the law is the immigration of Europeans and Asiatics through Canada. This occurs in two separate directions, first, immigrants who are manifested to Canadian ports, destined for the United States; and secondly, immigrants manifested to Canadian interior points, intending surreptitiously to cross over the border. In proportion to the efficiency of the inspection and deportation of immigrants at the seaports of the United States immigrants have come in increasing numbers by way of these two means of evasion. Those coming to Canadian seaports are inspected at those ports by United States inspectors under a voluntary agreement with the steamship companies. To each immigrant admitted by the inspectors is given

a certificate which is accepted by the immigration commissioner at the American entry, and the railway companies carrying passengers from Canadian ports to the American side agree to refuse to sell tickets to those who have not received said certificates. Steamship companies also agree to deport them. The entire provision is largely a dead letter, owing to the fact that the United States Government does not have legal authority to arrest the debarred immigrants on Canadian soil and conduct them to the steamship. Furthermore, tickets are purchased by third parties from the railway companies, and should an immigrant without a certificate be arrested at the American border there is no legal authority to carry him across Canadian territory and place him upon the steamship that has brought him to the Canadian port.

Far more serious, however, is the manifesting of immigrants to a Canadian interior point with the intention of forwarding them across the border, and thus escaping inspection. In this way United States inspectors at the Canadian ports have no authority whatever, even under the voluntary agreement of the steamship and railway companies, since the immigrant is apparently destined to Canada and not to the United States. If he afterwards makes his way across the border and is arrested by the United States commissioner, he can not be deported through Canada, on account of the lack of legal authority. If he is arrested, he can only be sent to a port of the United States and deported to the country whence he came at the expense of the immigrant fund. If he is sent back to Canada he can very easily find his way back across the border at some point along the 3,000 miles of uninspected frontier. It is abundantly demonstrated that the greater part of the infirm people who come to us, the aliens who drift into our institutions, come by way of Canada. In this surreptitious manner immigrants who have been rejected at American ports have afterwards been found on the streets of New York City, having returned to this country through the Canadian entrance. The immigrant authorities have endeavored to adopt a system of inspection at European ports under agreement with steamship companies running to Canadian ports; but as the inspection depends solely upon the consent and cooperation of the steamship companies and has no legal binding force, it has proved an entire failure, and even a disadvantage in the enforcement of the immigration laws. It is well known also that large numbers of Chinese immigrants find their way across the Canadian and Mexican borders.

In view of the failure of the present methods of protecting the Canadian and Mexican frontiers from European and Asiatic immigration, it appears that the only effective means would be the designation of exclusive ports of entry along these boundary lines through which alone aliens should be admitted, and providing that all aliens who should enter through other points along said boundary lines should be

deemed violators of the law and subject to deportation, and that in order to carry this provision into effect the Commissioner-General of Immigration should be authorized to employ an adequate police force of inspectors to guard the entire boundary.

A bill drafted upon the lines thus laid down and providing for exclusive ports of entry was introduced by Senator Fairbanks on May 19, 1900, the main section of which reads as below. The provisions of the bill do not apply to citizens of Canada or Mexico, or those who have resided in those countries two years or more. Naturally the deportation of immigrants arrested in violation of this law, if enacted, would take place, not by sending them through Canada, but by conducting them to American ports and meeting the expense of their deportation from the immigrant fund. The expense of this system of policing 3,000 miles of territory would undoubtedly be great, and would require an increase in the head tax of probably $1 for each immigrant. Such an increase is not objectionable and is not restrictive, and even a larger head tax might well be collected if necessary to make the restrictive legislation effective.

[S. 4780, Fifty-sixth Congress, first session.]

A BILL providing for the designation of ports of entry for aliens along the boundary line between the United States and foreign contiguous territory.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Commissioner-General of Immigration be, and he hereby is, directed to name certain points along the boundary line between the United States and foreign contiguous territory, and to increase, diminish, or otherwise change, as may appear to him necessary from time to time, the points so designated, which shall be the sole ports of entry to the United States for all aliens not citizens of the Dominion of Canada or the Republic of Mexico or residents of either of said countries for at least two years prior to their emigration to the United States; and all aliens who shall enter through other points along said boundary lines than the points so designated shall be deemed to be here in violation of law and subject to deportation as by law provided; and the Commissioner-General of Immigration is furthermore authorized and directed to establish immigrant stations at the ports of entry so designated, to erect, or acquire the use by lease, of such buildings as may be necessary for the purpose of providing accommodations for inspection and other officers appointed to enforce the immigration laws, including this Act, and to establish and enforce such rules and regulations, not inconsistent with law, as he may deem necessary for the purposes indicated herein.

METHODS OF INSPECTION.

BETTER INFORMATION FOR INSPECTORS.

There is a general agreement among the officials of the immigration service that the powers of the inspectors in examining immigrants and in securing information upon which they shall base their decisions are inadequate. In the first place, the information furnished on the manifests made out by the steamship companies does not cover all of

the points upon which information is desired. With this in view, the Immigration Investigating Commission of 1895 proposed that the following additional questions should be inserted in the manifests of the steamship companies: "Has the intending immigrant been in the United States before? If so, how many times? How much money did he bring each time? How much money did he carry back each time? Does his family accompany him? If not, has he a family in Europe, and how many constitute his family, and what is their condition of health? Does he intend to send for his family later? Is any member of his family likely to be excluded by the immigration laws of the United States? If so, why? Has he any property in the country whence he comes? If so, what is its value?" Also the twelfth question in the present manifest is recommended to be changed so that information shall be given not only as to whether the immigrant has paid his own passage, but requiring him also to name the corporation, society, municipality, government, or person who has paid the passage. The thirteenth question should be amended so as to enable the inspectors to determine the exact amount of money which the immigrant brings. At present they are permitted to ask only whether he has $30 or less. If more than $30, no further information is permissible, but if less than $30 the exact amount can be inquired into. The following question is also suggested for addition to the manifest: "Has he ever been a member of an anarchist group or organization, or has he ever affiliated with such group or organization?"

CABIN PASSENGERS.

It is noticeable that cabin passengers are much less carefully inspected than steerage passengers, and that in their case the manifests made out by the steamship company on the European side and sworn to by the emigrant are dispensed with. There is no justification for this distinction, since the law applies equally to cabin passengers and steerage passengers. All who are aliens are legally required to be manifested; but owing to the greater influence of cabin passengers and their dislike to be called into an office and to answer the personal questions laid down in the manifests, the application of the law in their case is not observed. The significance of this exemption will appear from the fact that in the year 1901 there were, besides the 487,918 immigrants, 74,950 aliens who came as cabin passengers, making the total alien immigration of that year actually 562,868, which is nearly 15 per cent higher than it is usually considered to be, taking into account solely the steerage passengers. The report of the Commissioner-General of Immigration for 1900, referring to this class of cabin passengers, says:

> The chief distinction between the two classes reported being the fact that the last mentioned were of a more prosperous, and, according to social standards, of a better position than the former, and traveling in a cabin instead of the steerage. From a

practical point of view, however, it is difficult to see how diseased persons, contract laborers, immoral persons, etc., would be any less objectionable additions to our population, or that they are excepted from the general prohibitory provisions of the immigration laws by the mere circumstance of their being supplied with more money than the steerage passengers. As hereinbefore stated, the distinction that has grown up in practice of making an examination of cabin passengers only in exceptional cases is based upon a narrow conception of the purpose of the immigration laws, and one that is, in my opinion, at variance with the spirit of our form of government, laws, and institutions, and is one that, for both sentimental and practical reasons, should be abandoned in favor of a careful and impartial examination of all aliens seeking admission to this country.

In view of the objections and influence of the cabin passengers, it has been proposed that a certain concession be made to them, and that the questions contained in the manifests should not be asked at the port of embarkation, but should be asked on board ship. Says Commissioner-General Powderly:[1]

It could be arranged to have a slip of paper containing questions and stating the reasons why they are asked handed to each passenger, so that before he went to the purser to make his statement he should know what it meant.

This can not at present be carried out under the law, and an amendment to that effect is proposed by the Commissioner.

PERJURY.

A defect in the existing law is the failure to provide punishment not only for immigrants but also for all others who testify falsely in the presence of the inspector. In the present practice there is no hindrance to witnesses who are not immigrants making any sort of a statement and doing it with safety and impunity. The Immigration Investigating Commission recommends as follows:

False testimony given under oath before the board of special inquiry in the behalf of detained immigrants, made willfully and for the purpose of inducing the admission of the retained immigrants, shall constitute perjury; and if any person or persons shall knowingly or willfully allow such perjury to be committed every person so offending shall be deemed guilty of subornation of perjury, and shall on conviction be fined not exceeding $100, or be imprisoned not exceeding five years, or both, according to the aggravation of the offense. That if any person or persons shall willfully and knowingly make a false affidavit as to his financial responsibility as to a surety upon a bond or undertaking given for the purpose of inducing the admission of an immigrant, he shall be guilty of perjury, and shall be, on conviction, punished by a fine not exceeding $100, or by imprisonment not exceeding five years, or both, according to the aggravation of the effense.

DISCRETIONARY POWERS OF INSPECTORS AND COMMISSIONERS OF IMMIGRATION.

Various tests now in force and others which are advocated, such as liability to become a public charge, head tax, educational test, and so

[1] Reports Industrial Commission, Vol. XV, p. 38.

on, are designed to set a rigid standard for admission, which shall be as little as possible open to the discretion of the immigration inspectors. As an offset to the peculiar rigidity of certain proposed tests, such as the educational test and the restrictive head tax, it is proposed that a different principle be introduced and that the immigration inspectors and commissioners be given larger discretionary powers, so that when an examination of an immigrant occurs they can take into account combinations of reasons for exclusion and can make up their minds regarding individual qualifications not definable in law. In this way it is proposed that the commissioners of immigration at the various ports be given plenary powers to act according to their discretion, subject to appeal and review by the Department, in all cases where it is found difficult to enact a precise remedy by law. Assistant Commissioner McSweeney, in defense of this proposition, states that he does "not believe in the plan of trying to reach every little evil in immigration by a precise enactment, for this would oftentimes so bind the executive officers as to compel them to be unnecessarily severe in all cases, whereas their acts should, in each particular case before them, be tempered with justice and mercy as the exigencies of the case required." Such discretionary power, it is maintained, would be preferable to such rigid tests as those of education and head tax, which would necessarily exclude many desirable individuals, but the educational test, if not rigidly prescribed in law, could nevertheless be taken into account by the inspectors at their own discretion when passing upon the qualifications of the immigrant. On the other hand, certain undesirable qualities which can not always be precisely defined in law could be taken into account, such as immorality, for which at the present time no person can be deported under the existing terms of exclusion.

The objection naturally raised against the proposition giving administrative authorities discretionary power is that in a country governed by well-known laws enacted into statute the object is clearly to define the rights and privileges of individuals, and these are then placed under the protection of the courts, which in turn are guided by well-known precedents and which conduct their hearings by formal procedure. But the proposed legislation removes exact definitions of rights and privileges and makes the general opinions and prejudices of administrative officers, without established precedent, the final arbiter of the individual's fate.

To this it is replied that the board of special inquiry, composed of the inspectors at the ports, is a body of four men with power to take oath and examine the immigrant; that while their proceedings are not technically formal like those of a court of law, they are searching and adequate, considering the time at their disposal, and that an affirmative decision to admit requires a three-fourths vote, from which one mem-

ber has an appeal to the Secretary of the Treasury. On this account, it is maintained, the interests of the immigrant would be protected. On the other hand, it may be questioned, What reason is there to suppose that increased discretion granted to the inspectors would bring a better enforcement of the law than at present, when already their decision is not reviewable by the courts? They are, indeed, at the present time required to specify, in excluding an immigrant, the grounds for their action, for example, as "likely to become a public charge," "contract laborer," etc., but in making this decision, even where there is a combination of reasons and any one is inadequate, they nevertheless exclude the immigrant and assign the reason which predominates. As stated by Mr. McSweeney:[1]

> The fact is that those who decide for the deportation of the alien are executive officers, who value the evidence before them different from the way a judge would, and are not fettered by any restriction as to the legal import of testimony, and are guided solely by their consciences and impressions which arise during the examination, and in this way reach their conclusions.

This being the case, it necessarily follows that the strictness of the enforcement of the law as regards deportations, either with or without the proposed amendment increasing the discretion of the inspectors, is mainly a question of the attitude of the inspectors and commissioners themselves toward the policy of excluding immigrants, and depends therefore upon the character of the men appointed to enforce the law, upon the influences that surround them, and upon their predisposition regarding the policy of exclusion. It does not appear, therefore, that the inspectors should be given greater discretionary powers, but that their appointment be made on a higher basis of efficiency and independence.

CONTRACT-LABOR LAW.

DEPORTATION OF CONTRACT LABORERS.

It is generally agreed that the enforcement of the alien contract-labor laws following the administrative improvements of 1893 materially reduced the number of importations of contract laborers, especially of those imported in times of labor disputes. Gradually, however, in the course of years, the law has become less and less efficient. First, immigrants already in the country are the main source of inducements for other immigrants to come. Fully 65 per cent of the immigration to this country is on prepaid tickets and money sent from this country to Europe for the purchase of tickets, and these tickets are furnished upon the basis of correspondence from immigrants already located, describing their own success in finding employment and good wages and telling of the demand for labor. In this way a continuous agita-

[1] Reports Industrial Commission, Vol. XV, p. 79.

tion is conducted in European countries toward migration. In the early stages of immigration from a given country the inducement of a formal contract is a very important feature, but it becomes of less importance in the later stages, when the migration grows to large proportions. Secondly, those who promote migration are no longer corporations which employ labor, but are importing agencies of the several races, with branches in their own country and in America making a specialty of this line of business, furnishing labor to American corporations on order, and systematizing their arrangements after a long experience with the loopholes in the restrictive legislation. Foreigners are collected in companies by these agencies from the villages of Europe. They are forwarded to the ports of deportation and are coached in their answers to be given to the American inspectors; and at the same time wholesale bargains and understandings are made with the steamship companies for their transportation. When they land they are met by the American agents, whom they recognize by their secret countersign. They are then forwarded to their destination, are boarded at the hotel of the agency, and are turned over to the employing contractors in the same way as would be done by an ordinary employment agency. With this new and highly developed plan of importation it is practically impossible to prove a contract. But under the law the Bureau can not deport the immigrant unless it can prove a contract. A contract as interpreted by the courts does not exist. True, the courts do not have jurisdiction over deportations, since the decision of the inspectors, approved by the Secretary of the Treasury, is final. But so apprehensive are the inspectors and the appellate administrative authorities of excessive power on their part that the benefit of the doubt is given to the immigrant. Such is not the spirit of the law, which plainly gives to the Government the benefit of the doubt and requires that contract laborers as well as other excluded classes shall be debarred unless it is "affirmatively and satisfactorily" shown on special inquiry that they "do not belong" to any of the excluded classes.[1] Immigrants nearly always declare that they do not come under contract, and it is only a very few who happen to lack coaching, and so make the mistake of admitting a contract. To meet this new aspect of the importation of contract labor it is proposed by various officials that the inspectors and commissioners of immigration be given plenary or discretionary powers. This topic is treated under the preceding head.

ARREST OF IMMIGRANTS AFTER LANDING.

The difficulty in the way of discovering a contract at the time of immigration makes it important that the power to arrest and deport immigrants subsequent to landing shall be exercised with energy dur-

[1] Act October 19, 1888, sec. 7.

ing a period long enough to accomplish the results desired. Under the existing law the Secretary of the Treasury has power, in case he is "satisfied that an immigrant has been allowed to land contrary to the prohibition of that law, to cause such immigrant within a period of one year after landing or entry to be taken in custody and returned to the country from whence he came at the expense of the owner of the importing vessel, or, if he enter from an adjoining country, at the expense of the person previously contracting for his services." The warrant of the Secretary of the Treasury under this clause can not be questioned by the courts, and the Secretary's authority is as complete and final as in the case of an immigrant who is not permitted to land. Under this clause it is possible for the agents of the Bureau to follow suspected contract laborers to the places where they are supposed to be at work under contract and, upon investigation on the spot, to add to the evidence taken at the time of immigration.

PROSECUTION OF THE IMPORTER.

1. Definition of the offense: As has been fully shown (Vol. XV, p. 647 et seq.), the wording of the contract-labor law is such that, holding, as the courts do, to a strict interpretation of a contract, it is practically impossible to secure conviction of the importer, although the existence of an agreement to furnish work may be morally certain and is actually considered adequate for deportation. On this account it was proposed by the Immigration Investigating Commission of 1895 that the definition of the offense be amended so that not merely a contract, but also any inducement for the purpose of giving the immigrant labor in this country, shall be illegal. This would be accomplished by inserting in the act of 1885 the words, wherever necessary, "by any undertaking or promise of employment upon arrival in the United States."[1]

A more drastic definition of the offense committed by the importer is proposed by Mr. Quinlan, supervising inspector of the contract labor bureau at the port of New York.[2] The amendment suggested by Mr. Quinlan is to the effect—

> That any alien coming to this country under any inducement, request, or suggestion that work or labor can or may be secured here, although there be no contract or agreement of any kind, shall be excluded, and that all persons offering or holding out any such inducement, request, or suggestion, even though there be no proof of any contract or agreement, shall be subject to the penalties already provided for contractors; also, that the same penalties be visited upon contractors and offerers of inducements, requests, or suggestions, whether the contracts, inducements, requests or suggestions, be made in this country or elsewhere.

[1] Immigration Investigating Commission, 1895, p. 41, and Reports Industrial Commission, Vol. XV, p. 657.

[2] Reports Industrial Commission, Vol. XV, p. 122.

An analogy which may serve as a precedent for an amendment of this kind is found in the act of 1891, making publication of an advertisement in any foreign country promising employment in this country an offense with the same penalties as in the case of a contract. An advertisement is one form of inducement, and is the only form which is at the present time punished by law. The criminal law has other analogies wherein inducements to commit offense are themselves treated as a crime, e. g., subornation of perjury, etc. In all of these cases the question of fact, whether the promise or inducement is a mere "frivolous or casual praising of the country" or is an actual promise coming under the intent of the law, would be submitted to a jury and determined by them upon the evidence. In this way the importer would be protected against arbitrary prosecution owing to the apparently broad scope of the offense.

A new definition of the offense, like that proposed, would also meet the difficulty now experienced by the officials in that interpretation of the courts which makes the fact of immigration and landing in this country necessary to the completion of the contract.

2. Under the existing law the contract laborer, who is necessarily the principal witness for the prosecution of the importer, is required to be deported at once or within a reasonable time, and so is placed outside the jurisdiction of the United States courts at such later time as the suit may come up for trial. To meet this situation it was proposed by the Immigration Investigating Commission of 1895 that testimony of an immigrant ordered to be deported should be taken in a summary manner, after giving short but reasonable notice to the party charged with inducing him to migrate in violation of the alien contract-labor laws, and the party so charged "should have the right to appear in person or by counsel and cross-examine the witness, the testimony thus taken to be used as evidence in any action instituted, or to be instituted, to punish the person so charged and to have the same effect as if the witness had so testified in open court."

It is difficult to see how the privilege of taking testimony in cross-examination as above proposed by the Immigration Investigating Commission could improve materially the existing practice, since, as stated by Dr. Ullo,[1] the legal counsel of the immigration bureau at the port of New York—

> Before they are deported their testimony can be taken de bene esse, but as a matter of practical results how does cold type and cold reading of testimony compare with viva voce testimony given by the defendant? When the lawyer takes that testimony de bene esse he does not know the defense of the other side. He has not formed a theory of the defense in his mind. The examination is merely examination of the principal elements in the case, perfunctory, and no lawyer can be ready to go to trial with what can be said just at the beginning without the pleadings. You might ask the defendant as to his defense, but what he says is not sworn to and you have to take what he says as to his defense.

[1] Reports Industrial Commission, Vol. XV, p. 144.

3. Under the existing law the prosecution of the importer turns upon information furnished by the inspectors or commissioners of immigration, or by the contract laborer himself, and depends upon the discretion of the United States district attorney as to whether suit shall be brought or not. The main obstacle in the way of bringing suit is the discouraging view taken by district attorneys who direct attention to that principle of construction which exacts evidence of a most conclusive nature in the enforcement of laws of a penal character. In case the Government wins the suit the informer, who is usually the contract laborer, may receive not exceeding one-half the penalties recovered. Plainly, since the district attorney is not personally interested in bringing suit, since the main source of testimony against the importer is the laborer with whom he contracted, and since this laborer usually connives with the importer in concealing the fact of the contract, there would probably be a larger number of prosecutions if these conditions were removed and if the contract laborer himself were authorized to bring action and to secure for himself the entire penalty. This would be accomplished by granting to the contract laborer the right of action against the importer to the amount of the fine imposed. Or, since the contract laborer could not in many cases be relied upon to break with his employer, it is proposed that not only the laborer, but any person or organization should have such right of action against the importer. A provision of this kind was introduced in the Canadian contract labor law of 1897, which, in addition to the usual prosecution by the attorney-general, authorizes any person, with the consent of the judge of the court in which the case is intended to be brought, to sue for and recover the amount as a judgment in any court of competent jurisdiction. The objection that a provision like the foregoing, wherein a private suit against an employer by the employees or by outside persons, might subject the employer to unfounded and irritating suits brought for the purpose of backmail, or by a lawyer for the fees, or by hostile trades unions, is apparently obviated by the requirement of the Canadian law that the suit intended shall first have the written consent of the court in which the action is to be brought.

DEPORTATION OF IMMIGRANTS.

EXTENSION OF PERIOD OF DEPORTATION.

It has been pointed out that during the interval between landing and naturalization the Government of the United States is liable to indemnity for injuries inflicted upon aliens. From this premise it is inferred that the United States Government should therefore have the right to send back an alien at any time within this same period. Until a man becomes a citizen of the United States, if he commits a crime or in any other way becomes a charge, he should be sent back to his own

Government. This conclusion is greatly strengthened when it is remembered that certain foreign Governments, whose citizens come here in large numbers, continue to look upon them as "colonists" and to exercise supervision over them during the entire period preceding naturalization by this country.

It is a well-known complaint of the charity authorities in the city of New York that the immigrants from various nationalities often apply for admission to the public authorities promptly at the end of the first year after landing, this being both the limit of time for acquiring a settlement under the laws of the State and for deportation by the immigration officials. The extension of the period of deportation for at least two years, and possibly five years, will be an important improvement in the efficiency of the law.

BUREAU OF INVESTIGATION AND DEPORTATION.

Fully as important in its effect on the exclusion of undesirable classes is the investigation and deportation of cases where landing has been effected, owing to the inability of the inspectors to satisfy themselves upon adequate grounds for exclusion. At the present time this branch of work of the Immigration Bureau is under the charge of the several commissioners and of local special agents stationed at different cities in the interior. Various charitable societies of New York and elsewhere have frequently made complaint that the cases which come upon their hands are not adequately provided for by the commissioners of immigration. The charity authorities are compelled to send information to the commissioner of the port where the landing was made, stating the ship and approximate date of landing. It is not easy always to give the details required by the immigration officers. The deportation of criminal and dependent classes by the several States is at the present time mainly ineffective. The State of Massachusetts, through its State boards of lunacy and charity, furnishes three-fourths of the cases deported. This is because Massachusetts is the only State which has highly perfected its legislation and administration with reference to this particular problem. The State board of lunacy, through its permanent officers, inspects carefully all cases, whether under State or local supervision, with special reference to deporting to other States and foreign countries those who are not properly chargeable upon their own institutions. The State of Minnesota has, to a considerable extent, succeeded in accomplishing results similar to those of Massachusetts. With these exceptions, the unassisted State authorities have made but little progress in maintaining exemption from the burden of pauperism which properly belongs to foreign countries. The main difficulty, it is alleged, is the lack of assistance on the part of the Bureau of Immigration. An inspection officer must usually be detached from his duties in order

to go to the interior and conduct the alien to the port, thus often seriously interfering with the regular work of inspection. To meet this defect, it has been proposed that, in addition to the existing bureau of inspection at ports of landing, there be created also a bureau of investigation and deportation, under the direction of the Commissioner-General of Immigration, but entirely removed from connection with or responsibility to the existing officers at the ports. This bureau of investigation would have for its first duty a closer cooperation with State boards of charity, local authorities, labor unions, bureaus of labor statistics, for the purpose of informing these authorities of their rights under the law and of undertaking the investigation of cases to which its attention may be directed. The bureau might also be intrusted with the duties of employment agencies, or as guides to employment, such as is proposed by Commissioner-General Powderly in his testimony before the Industrial Commission.[1] He said:

> The enactment of a statute designating each head of a State bureau of labor statistics an agent of the Federal Government for the purpose of collecting information which would show where trade was brisk and where it languished, where certain classes of labor were in demand, and where the market was overstocked, and at stated intervals forwarding this information to the Bureau of Immigration, would be of great benefit to arriving immigrants. * * * Through post-offices, or other governmental commissions, accurate information concerning the state of trade and labor could be obtained from all points, and in States where no labor bureaus existed an agent of the Immigration Bureau should be stationed to attend to the compiling and forwarding of the statistics above indicated.

The importance of cooperation with State authorities may be inferred from the testimony of Mr. Hall,[2] who says that in 1896 the State board of charity of Massachusetts was able to furnish accurate information for deportation in the case of only 133 out of 372 sick persons of foreign birth who were public charges.

A bureau of this kind, also by making a yearly census of public institutions, showing the number of aliens, the number of naturalized foreigners, and the number of Americans by the country of birth of the parents, would not only furnish information to the public, but would be of advantage in the administration of the law. The landing certificate and the immigrants' directory to be mentioned hereafter would naturally come under the supervision of this branch of the service.

It is especially important that the public generally may be kept fully informed of the work of the Immigration Bureau, and this is not at the present time provided. The annual reports of the Commissioner-General of Immigration number only 40 to 60 pages, and contain the briefest statistical exhibits, a summary of financial operations, and

[1] Reports Industrial Commission, Vol. XV, p. 39.
[2] Reports Industrial Commission, Vol. XV, p. 63.

condensed recommendations. From this exceedingly brief report those interested in following the work of the Immigration Bureau do not gather the details of administration which they desire. The bureau is constantly receiving reports made by its special agents, some of whom have investigated conditions in foreign countries and ports of debarkation. Others have been assigned to look up contract-labor cases and public-charge cases. The publication of these special reports would be of immense service in enlightening the public, and especially those who desire to follow the work of the bureau. Examples of the light that would be thrown upon the problem of immigration by complete reports of this kind will be found in the volume on Immigration.[1]

ORGANIZATION OF IMMIGRATION BUREAU.

SEPARATION FROM CUSTOMS-REVENUE SERVICE.

The Bureau of Immigration as at present constituted has grown up gradually out of the customs-revenue service of the Treasury Department. The passenger act of 1882, which provided for excluding convicts, lunatics, and public charges, was administered by State boards of charity, and State commissioners of immigration, with whom the Secretary of the Treasury made contracts, and in minor ports by collectors of customs. The law of 1885 provided contract-labor inspectors distinct from both the State boards and the customs inspectors, but even at the present time a small proportion of the work of the immigration inspection is conducted by customs officers. This remnant of the original confusion of the two lines of work creates at the present time considerable difficulty. Says the Commissioner-General in his annual report of 1899:

> Daily experiences furnish proof that the union is an unnatural one, substituting for customs service, in place of an officer trained therein, one who has but little or no knowledge of it—a wrong to that branch of the service—and withdrawing from the performance of his duties an official especially appointed therefor.

The report for 1900 says:

> The chief reason for the divorce of the immigration and customs services is the comparative unimportance to the collection officers of enforcing the immigration law and their ignorance of its provisions, and the consequent disposition to interchange inspectors and assign them for convenience sake to duties other than those they were appointed to discharge.

It is affirmed by the Commissioner-General that "the ease with which our Canadian boundary line is crossed is due in part to this amalgamation, for the policy of assigning immigration officials to the supervision and control of collectors of customs prevails most extensively along that border; and elsewhere inspectors of immigration are really required to act as customs officers."

[1] Reports Industrial Commission, Vol. XV, pp. 683–693.

By the act of June 6, 1900, the administration of the Chinese exclusion law was transferred to the Commissioner-General of Immigration, but the effect of this transference does not consist in the removing of the Chinese inspectors from the supervision of the collectors of customs at the several ports. The collectors continue to be the superior officers and to make the decisions. The only change brought about by this amendment is in the matter of appeals, which, since that date, are made to the Commissioner-General of Immigration instead of the customs division of the Treasury Department.

CENTRALIZATION OF ADMINISTRATION.

The theory underlying the laws creating the Bureau of Immigration and providing for the appointment of inspectors is that of a separation of executive from judicial powers. It appears to have been the view of the framers of the several laws that the question of admitting or excluding immigrants is solely a judicial question, and consequently the inspectors and boards of special inquiry, particularly the latter, are given judicial power, and are not responsible in the exercise of this power to the local commissioners at the ports. These commissioners are purely executive officers. It is their business to assign inspectors to their respective duties, but not to interfere in their decisions when once they have been assigned to the judicial branch of their work. The commissioner does not even have an appeal from a decision of an inspector or a board of special inquiry. If an appeal is made by the immigrant or by a dissenting member of the board of inquiry it goes directly to the Commissioner-General at Washington, whose approval is subject to the final decision of the Assistant Secretary or the Secretary of the Treasury.

From the standpoint of an ordinary business administration it might appear that this division of authority between executive and judicial powers at the ports would result in inefficient administration, and such is the complaint raised by Commissioner Fitchie, of the port of New York, in his testimony before the Industrial Commission.[1] Mr. Fitchie says:

> The evolution of the law of immigration has vested a number of men who were originally appointed as interpreters, and for that purpose only, with powers of admission, and, if they are members of the board of special inquiry, exclusion of immigrants applying to be landed. To those who are excluded the avenues of appeal are open, but the other side of the question—the admission of undesirable immigrants—is absolutely under the control of the inspection officer, without any right of appeal from his decision. The law says that the inspection officer "shall hold for special inquiry those who are not clearly and beyond doubt entitled to admission." It thus becomes a matter of conscience with the inspection officer. If there is no doubt in his mind, he admits the party, regardless of the facts in the case, and the commissioner has no definite right in law to reverse this decision pending further investigation or appeal. So, also, with the boards of special inquiry chosen from

[1] Reports Industrial Commission, Vol. XV, p. 75.

subordinate officers. They are sometimes without very much legal or judicial qualification, but they are placed in a position where they are, for the time being, judges. If their decision should be ever so wrong, it is final after the immigrant is admitted. I believe that as the commissioner of immigration represents the President and the Secretary of the Treasury directly, and is the responsible party, he should be given the right to veto any act of his subordinate officers, subject to proper report and appeal to the Commissioner-General of Immigration and the Treasury Department. I believe this is absolutely necessary to a proper and wise execution of the law.

In similar line with the foregoing recommendation of Mr. Fitchie, the Immigration Investigating Commission of 1895 (p. 44, No. 20) recommends that the commissioner be invested with "the power of suspending execution of the decision of any board of special inquiry, subject to the final decision of the bureau."

It will be seen that in the foregoing recommendation of Mr. Fitchie and the Immigration Investigating Commission it is proposed to place the judicial functions of the inspectors more directly under the executive branch, in order, as is intended, to make the authority of that officer equal to his responsibility. But it should be noted that since the commissioner at the port has the power to suspend inspectors, or to recommend them for dismissal, or to reduce them in service by assigning them to inferior positions or by refusing to place them on boards of special inquiry, he has already a decidedly powerful influence in controlling their decisions. Indeed, on the basis of the judicial theory of their duties and powers, his control is excessive. Were these boards made entirely independent of the commissioners in order to carry out the judiciary theory to its logical limit it would be necessary that their appointment should reside solely in the Secretary of the Treasury or the President of the United States. They should, on this theory, have permanent appointment like that of Federal judges, and should not be subject to the discipline of either the Commissioner-General or the commissioners at the ports, and should not be subject to detail for administrative work. The advantage of carrying out this theory appears in the argument that a board of judges is less open to the influence of local politicians or of financial interests, and to subject them to the discipline of a local executive officer lessens their strict interpretation of the law. It must be noted that, with a complete record of each immigrant admitted by each inspector, should it turn out that the immigrant has been admitted in evasion of the law, the inspector or the board of special inquiry will be held responsible, and on account of their desire to maintain a high record of efficiency and to have a small number of cases of ineligible admissions brought back against them they are spurred to a high degree of energy in the enforcement of the law. That this is the case at the present time is true to a large degree, and it is alleged that the serious and extensive evasions of the law do not occur at the ports, but through the Canadian route of uninspected immigration.

APPOINTMENT AND REMOVAL OF INSPECTORS.

The position of inspector and member of the board of special inquiry, whose decisions are practically final in the admission or exclusion of immigrants, renders the selection of these officers a matter of grave importance. It is alleged that their salaries, ranging from $1,200 to $1,800, are too low to secure men of the mature judgment and knowledge of languages necessary for the responsibilities of their positions: also that in some cases appointees before the extension of the civil-service law to the immigration service, although incompetent, are now protected by that law; further, that the civil-service law itself often gives preference to men of learning, yet without practical experience. The correction of these conditions, while essential to the good working of the immigration laws, belong to the general question of the civil service.

If, however, the judiciary theory of inspection, as described above, were carried out to its limit, the boards of special inquiry and inspectors, not being considered as administrative officers, but as judicial officers, would be removed from the operations of the civil-service law, and would be appointed directly by the President of the United States.

Power of Commissioner-General of Immigration.—The position of the Commissioner-General of Immigration is a peculiar one. The law of 1891 created the new office of superintendent of immigration, the officer to be appointed by the President, with the advice and consent of the Senate. In the general appropriation act of 1895 the title was changed to that of Commissioner-General of Immigration, with the duties of enforcing the contract-labor laws. The Commissioner-General's position is that of a superintendent or general manager without the power to enforce his decrees.

The Secretary of the Treasury and the Assistant Secretary are the responsible officers who designate the appointment of all subordinates (except the commissioners of the ports, who are appointed by the President and confirmed by the Senate), and the Commissioner-General or the Secretary authorizes officers to act as members of the board of special inquiry, but they are assigned to that service by the commissioners of the ports. All appeals from the boards of special inquiry are subject to approval by the Secretary, which gives that officer absolute control. The duties of the Commissioner-General under these conditions consist in making certain statistical compilations and in the investigation of contract-labor cases after landing. Since June, 1900, the execution of the law excluding Chinese labor has been taken from the customs service and placed under the Commissioner-General, but even in this case an appeal lies over the head of the Commissioner-General to the Secretary of the Treasury. The responsibility of the Commissioner-General for the enforcement of the law through all its branches is incomplete. He occupies a position largely nomi-

nal, although from his title the public generally assumes that he is directly responsible for the administration of the law. It would seem that the immigration service is of sufficient importance to be separated entirely from the customs service, and the Commissioner-General should be made a responsible officer, having control under civil-service rules of all appointments, except those of the commissioners at the ports, and deciding appeal on all decisions by boards of special inquiry and commissioners of the ports. Under the Commissioner-General of Immigration there would then be the three divisions of the service, namely, the division of the inspection at the ports, the proposed division of interior investigation and deportation, and the division of foreign inspection at ports of embarkation. A rearrangement of this kind, centralizing the scattered authorities of the existing bureau, would not only simplify and make effective the working of inspection and exclusion, but would also enable the public more accurately to locate responsibility.

If, at the same time, the judicial theory of the appointment of boards of special inquiry were carried out, these officers would not be appointed by the Commissioner-General, but by the President of the United States. Appeals, however, from their decisions would be made to the Commissioner-General.

The foregoing discussion of recommendations has to do with the administrative features of existing laws, and not with the introduction of any new principles of exclusion. The object to be attained in this respect is simply to perfect the law as it stands. There are, however, various propositions before the public for additional restrictions. Every representative of wage earners who has appeared before the Industrial Commission has strongly advocated additional restrictions, some of them going as far as the prohibition of all immigration for a period of years. These and other witnesses have also advocated in some cases specific tests which should lessen the number and improve the quality of immigrants. The more important of these proposed tests are discussed below.

RESTRICTIONS ON IMMIGRATION.

EDUCATIONAL, OR LITERACY, TEST.

In view of the large and increasing immigration in recent years, and the remarkable extension of its recruiting area to eastern Europe, and the alleged need on these accounts of more general restriction, together with the desire to adopt a test which is in harmony with American citizenship and at the same time does not depend on the discretion of inspectors, the so-called educational, or, preferably, literacy, test has been widely advocated and indeed adopted by Congress, although vetoed by President Cleveland. It is argued by those

who favor this test that exclusion on any basis must work a certain amount of inconsistency, but that the educational test, while effecting the leading object of materially lessening immigration, would be simple and as nearly devoid of discretion on the part of inspectors as any that could be adopted. It is held, too, that this test is more nearly a specific than any other, because it would affect most largely those countries which are now sending the most undesirable element, especially Italy and southeastern Europe. The comparative effects of such a restriction may be seen from the fact that in the year 1900 the number of illiterates among the immigrants over 14 years of age from western Europe was only 4 per cent of the total number arriving, whereas the per cent of those from eastern Europe was 36.6. The races most affected among those sending the larger numbers of immigrants would be the Portuguese, with 60.2 per cent illiterates; the Syrians, with 56.4 per cent; the Southern Italians, with 54.5 per cent; the Croatians and Slovenians, with 37.4 per cent; the Poles, with 31.6 per cent; the Lithuanians, with 32.1 per cent; the Slovaks, with 28 per cent; the Hebrews, with 22.8 per cent; the Greeks, with 17.5 per cent, and the Magyars, with 16.9 per cent. The races least affected would be the Scandinavians, with only 0.8 of 1 per cent illiterates; the English, with 2 per cent; the Scotch, with 2.1 per cent; the Finns, with 2.7 per cent; the Irish, with 3.2 per cent; the Germans, with 5.8 per cent, and the Northern Italians, with 11.8 per cent illiterates.

It is sometimes argued that the educational test would not keep out the Chinese, or Japanese, or Russian Jews, and that the countries of southeastern Europe are improving their school systems and their compulsory educational laws, so that these classes would not long be excluded under such a test. In answer to this, the educational test is not proposed as a substitute for other tests, but as an addition to other tests. Those who, on account of criminality, pauperism, contract labor, or other specified grounds, would be debarred, would still continue to be debarred, though they could pass the educational test.

This test would also affect those classes which bring the least amount of money, the largest numbers of paupers and unskilled laborers, and those who congregate most notably in American cities. The Southern Italians brought, in 1900, only $8.84 per capita; the Syrians, $14.81; the Lithuanians, $7.96; the Poles, $9.94; whereas other races, scarcely affected by an educational test, brought in larger sums of money. The Scotch brought $41.50 per capita; the English, $38.90, and the Germans, $28.53. There is a remarkable uniformity in the amounts brought in by immigrants of the respective races from year to year, so that the figures for 1900 closely represent the financial standing of immigrants in other years.

Again, it is argued that an educational test would keep out industrious and desirable immigrants. Especially would it keep out the virtuous and industrious Irish girls, who come to this country seeking positions

as domestic servants. Many immigrants who came years ago, though illiterate, have made good citizens and have intelligent and educated children. In reply to this, it is argued that the American States in former times did not make the great effort nor expend the large sums of money which they now expend for the education of American children. At the present time many States, and those most affected by immigration, have compulsory educational laws, and the admission of illiterate immigrants is the principal means of evading these laws. If compulsory education is desirable as a preparation for American citizenship and as a protection to the citizens themselves, it is equally desirable both for immigrants who are prospective citizens and for American children who are prospective citizens.

On this point there are many who think that, while education should not be considered a test of the admission of immigrants, it should be required as a condition of naturalization, and that no person should be admitted to American citizenship who could not read and write the English language. They hold that naturalization is a question entirely separate from immigration and that the tests for naturalization should be more strict than those for immigration. But the question arises on this point, Is it desirable to have a large class of citizens and residents who are permanently excluded from the suffrage, and, if the educational system of the country has for its main purpose the preparation for citizenship, should not the immigration laws also have for a leading object the protection of American citizenship?

Those who, as just stated, distinguish between naturalization and immigration usually base their opinion upon the assumption that American industry needs unskilled labor and that this labor can be secured only from other countries. But others, like President Walker,[1] hold that the very reason why Americans will not work at these lowest and hardest occupations is because of the competition of lower standards of living. They say that formerly English-speaking people did fill these subordinate places, but that with the competition of lower standards of life they have resorted to a restriction of their numbers through later marriages and smaller families in order to escape to the higher occupations, and that were it not for the immigration of the past 50 years there would now be in this country fully as large a population as at present, but the lower grades of work would be done by descendants of the original stock who would continue with large families to live on relatively lower standards, though not as low as those of the incoming immigrants.

It is alleged that an educational restriction is opposed by foreigners now in this country, but it is doubtful whether this is a fact. The leading representatives of different races and nationalities when approached upon the question do not maintain that they object to an educational qualification for admission, partly because they hold that

[1] Reports Industrial Commission, Vol. XV, p. 277.

their home countries are rapidly developing compulsory educational systems, and partly because they see the inconsistency of American legislation which, on the one hand, spends large sums to educate American children, and, on the other hand, opens freely its gates to those who have not been required to secure a parallel education.

Again, it is alleged as an administrative difficulty that the inspectors and the ports are already overcrowded and that to add an educational test would double the time required for inspection. To this it may be replied that the knowledge of such test would keep large numbers from coming, and, also, that in the arrangement of the immigrants for examination at the ports educational inspectors can be located farther down the line of immigrants, so that the three kinds of inspection can be carried on at the same time, namely, medical inspection, educational inspection, and the general inspection. This would take not more time but more inspectors.

Certain inspectors of immigration, who give weight to the objections against an educational test and who favor discretionary power for inspectors, maintain that the educational qualification, if not definitely specified as a test, would nevertheless be a proper consideration for inspectors to take into account in their examination of immigrants, but, with discretionary power, they might, where an illiterate person is plainly a desirable immigrant, admit him notwithstanding his illiteracy. To this it may be replied that one object of the educational test is the substitution of well-known rules for the discretionary action of inspectors, and that the spirit of American institutions is more nearly followed in making this requirement.

The example of the British colonies is cited as an argument for the feasibility of the educational test. Such tests exist in British Columbia, Western Australia, and Natal. In addition to the ordinary restrictions regarding paupers, criminals, and defectives, and the Chinese and Malay races, these colonies provide a simple educational test. In British Columbia it is provided, under the law of 1900, that "the immigration into British Columbia of any person who, when asked to do so by the officers appointed under this act, shall fail himself to write out and sign in the characters of some language of Europe an application to the provincial secretary of the Province of British Columbia to the effect of the form set out in Schedule B, to this act annexed, shall be unlawful."

The Schedule B referred to above, which is to be written and signed in some language of Europe by the immigrant, is as follows:

Schedule B.—Province of British Columbia.

SIR: I claim to be exempt from the British immigration act of 1900. My full name is ——— ———. My place of abode for the last 12 years has been ———. My business or calling is ———. I was born at ———, in the year ——.

Yours, etc.,

——— ———.

The clause providing for the enforcement of the act requires the immigration officer to make complaint before a magistrate or justice of the peace, who shall investigate and decide in a summary manner upon such complaint against any immigrant for contravention of the educational test prescribed, and to impose a fine of $500, or in lieu thereof imprisonment not exceeding 12 months, unless the fine and costs are sooner paid; provided, that the imprisonment shall cease upon the offender finding two approved securities, each of $250, that he will leave the province within one month.

Western Australia, in the immigration restriction act of 1897, provides that "any person who, on being asked to do so by the officer appointed under this act, shall fail himself to write out in the presence of such officer in the characters of any language of Europe a passage in English of fifty words in length taken by such officer from any British author, and to append his name thereto in his own language," is prohibited from landing. The Natal act is practically identical with that of British Columbia.

The so-called "Lodge bill," which was adopted by the Fifty-fourth Congress and vetoed by President Cleveland, is given in full as follows: The omitted sections, 4, 5, and 6, are the so-called Corliss amendment applying to temporary immigration from Canada and not a part of the original bill as introduced by the advocates of educational restriction. Senator Lodge, in reintroducing his bill in December, 1899, excluded sections 4, 5, and 6. The simplicity of the test herein proposed entirely overcomes the objection that an educational test is designed to admit only the educated and academic classes. All that is required of the immigrant is that rudimentary learning which can be acquired in the early years of school training.

[Fifty-fourth Congress of the United States of America; at the second session, begun and held at the city of Washington on Monday, the seventh day of December, one thousand eight hundred and ninety-six.]

AN ACT to amend the immigration laws of the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section one of the act of March third, eighteen hundred and ninety-one, in amendment of the immigration and contract-labor acts, be, and hereby is, amended by adding to the classes of aliens thereby excluded from admission to the United States the following: All persons physically capable and over sixteen years of age who can not read and write the English language or some other language; but a person not so able to read and write who is over fifty years of age and is the parent or grandparent of a qualified immigrant over twenty-one years of age and capable of supporting such parent or grandparent may accompany such immigrant, or such a parent or grandparent may be sent for and come to join the family of a child or grandchild over twenty-one years of age, similarly qualified and capable, and a wife or minor child not so able to read and write may accompany or be sent for and come and join the husband or parent similarly qualified and capable.

SEC. 2. For the purpose of testing the ability of the immigrant to read and write, as required by the foregoing section, the inspection officers shall be furnished with copies of the Constitution of the United States, printed on numbered uniform paste-

board slips, each containing not less than twenty nor more than twenty-five words of said Constitution printed in the various languages of the immigrants in double small-pica type. These slips shall be kept in boxes made for that purpose and so constructed as to conceal the slips from view, each box to contain slips of but one language, and the immigrant may designate the language in which he prefers the test shall be made. Each immigrant shall be required to draw one of said slips from the box and read, and afterwards write out, in full view of the immigration officers, the words printed thereon. Each slip shall be returned to the box immediately after the test is finished, and the contents of the box shall be shaken up by an inspection officer before another drawing is made. No immigrant failing to read and write out the slip thus drawn by him shall be admitted, but he shall be returned to the country from which he came at the expense of the steamship or railroad company which brought him, as now provided by law. The inspection officers shall keep in each box at all times a full number of said printed pasteboard slips, and in the case of each excluded immigrant shall keep a certified memorandum of the number of the slip which the said immigrant failed to read or copy out in writing. If in any case from any unavoidable cause the foregoing slips are not at hand for use, the inspection officers shall carefully and thoroughly test the ability of the immigrant to read and write, using the most appropriate and available means at their command, and shall state fully in writing the reasons why the slips are lacking, and describe the substitute method adopted for testing the ability of the immigrant.

SEC. 3. That the provisions of the act of March third, eighteen hundred and ninety-three, to facilitate the enforcement of the immigration and contract-labor laws, shall apply to the persons mentioned in section one of this act.

* * * * * * *

SEC. 7. That notwithstanding the provisions of this or any other existing law, the Secretary of the Treasury may permit aliens to enter this country for the purpose of teaching new arts or industries under such rules and regulations as he may provide.

SEC. 8. That this act shall not apply to persons arriving in the United States from any port or place in the island of Cuba, during the continuance of the present disorders there, who have heretofore been inhabitants of that island.

SEC. 9. That this act shall take effect July one, eighteen hundred and ninety-seven.

THOMAS B. REED,
Speaker of the House of Representatives.
A. E. STEVENSON,
Vice-President of the United States and President of the Senate.

The probable effect of an educational test upon the immigration of the several races from Europe may be seen from the following table. The races of northwestern Europe are grouped together and also the Latin races of southern Europe, the races from the Austro-Hungarian and the Russian empires, and from the Balkan Peninsula and Turkey. The Bohemians and Moravians, who belong to the Austro-Hungarian Empire, are classed with northwestern Europe. This classification conforms to the geographic location of these races, since Bohemia projects westerly from Austria-Hungary.

The table shows the total number of immigrants of each race and the number of illiterates above 14 years of age of both sexes. This undoubtedly exaggerates the number who would be excluded by the educational test, since the test does not apply to the wives, daughters, or mothers, if the male immigrants upon whom they are dependent are

able to pass the test. The table shows that in 1899 there would have been excluded 2,348 persons belonging to the races of northwestern Europe, and 57,734 persons belonging to the races of southern and eastern Europe and Asiatic Turkey. In 1901 there would have been excluded 2,880 immigrants of the northern and western races and 113,972 immigrants of the southeastern races. The proportion of the total immigration excluded from the northwestern immigration would have been 2.16 per cent in 1899, and 2 per cent in 1901, while the proportion excluded from the southeastern races would have been 29.69 per cent in 1899 and 34.09 per cent in 1901. The aggregate effect upon all immigration from all countries would have been the exclusion of 60,446 persons in 1899 and 117,587 in 1901, or 19.39 per cent in 1899 and 24.09 per cent in 1901.

Noticing individual races it will be seen that the smallest proportion excluded is that of the Scandinavians, whose illiteracy is only one-fourth of 1 per cent in 1899 and one-half of 1 per cent in 1901 of their total immigration. The largest proportion of the Northwestern races ineligible on an educational test would have been that of the Dutch and Flemish, namely, 5.73 per cent in 1901. The Bohemians and Moravians, who, though coming from the Austro-Hungarian Empire, are classed with Northwestern Europeans, would have suffered, in 1901, the exclusion of 1 per cent of their total immigration; next are the French, with 3.27 per cent; the Germans, 3.17 per cent; the Irish, 2.85 per cent; the Welsh, 2.67 per cent; the Finnish, 1.63 per cent; the English, 1.19 per cent; and the Scotch, three-fourths of 1 per cent. On the other hand, of the Southern and Eastern races, the South Italian immigrants would have been reduced 50.55 per cent; Ruthenians, 49.81 per cent; Armenians, 44.9 per cent; Croatians and Slovenians, 37.78 per cent; Polish, 31.49 per cent, and Slovaks, 27.56 per cent.

Relative illiteracy of immigrants, 1899 and 1901.

Race	Immigrants, all ages.		Illiterates 14 years and over		Per cent of illiterates	
	1899	1901.	1899.	1901	1899	1901
English	10,712	13,488	128	161	1 19	1.19
Scotch	1 752	2,004	16	15	.91	.75
Welsh	1.359	674	33	18	2 43	2 67
Irish	32.345	30.404	1,158	867	3 58	2 85
Scandinavian	23,249	40,277	55	196	24	49
Finnish	6,097	9,999	62	162	1 02	1 63
German	26.632	34.742	640	1,100	2.40	3.17
Bohemian and Moravian	2,526	3.766	60	39	2 38	1.04
Dutch and Flemish	1 860	3 299	127	189	6 83	5 73
French	2,278	4.036	69	132	3 08	3.27
Total northwestern Europe	108,810	142,689	2 348	2,880	2 16	2 01

Relative illiteracy of immigrants, 1899 and 1901—Continued.

Race.	Immigrants, all ages.		Illiterates 14 years and over.		Per cent of illiterates.	
	1899.	1901.	1899.	1901.	1899.	1901.
Italian (north)	13,091	22,108	1,320	3,122	10.08	14.12
Italian (south)	65,689	115,704	30,463	58,493	46.41	50.56
Portuguese (Azores and Cape Verde Islands)	2,096	4,176	1,057	1,884	50.43	45.11
Spanish	996	1,202	59	150	5.92	12.48
Polish	28,466	43,617	7,524	13,739	26.43	31.49
Slovak	15,838	29,343	3,913	8,086	24.70	27.56
Croatian and Slovenian	8,632	17,928	2,120	6,773	24.56	37.78
Magyar	4,900	13,311	466	859	9.51	6.45
Ruthenian	1,400	5,288	546	2,634	39	49.81
Hebrew	37,415	58,098	5,637	10,119	15.07	17.42
Lithuanian	6,858	8,815	2,048	3,635	29.90	41.24
Russian	1,774	690	198	166	11.16	24.06
Greek	2,395	5,919	461	1,398	19.25	23.62
Armenian	674	1,855	119	344	45.12	44.99
Syrian	3,708	4,064	1,673	1,825	12.77	34.04
Bulgarian, Montenegrin, and Servian	94	611	12	208	27.52	27.73
Dalmatian, Bosnian, and Herzegovinian	367	732	101	202	17.70	36
Roumanian	96	761	17	274	19.80	44.86
Turkish	28	136	.....	61	.....	.....
Total southern and eastern Europe and Asiatic Turkey	194,467	334,353	57,734	113,972	29.69	34.09
Chinese	1,638	2,452	2	39	.12	1.59
Japanese	3,395	5,249	160	293	4.71	5.58
Cuban	1,374	1,622	26	108	1.82	6.35
Mexican	168	350	7	68	4.29	19.43
Spanish-American	160	200	.....	41	.....	.....
	6,730	9,873	195	444	.....	.....
All other races	1,708	1,008	169	291	.....	.....
Grand total	311,715	487,918	60,446	117,587	19.39	24.09

The percentages shown in the foregoing table undoubtedly exaggerate the number of immigrants who would be excluded by a bill so drawn as to admit not only children but also wives and parents of eligible males. The illiteracy figures are much larger for women than for men, and if a large proportion of illiterate women be admitted with their husbands who pass the test, the general average for all will, of course, be lowered. The published statistics of immigration do not separate males from females as regards illiteracy, but the following table, drawn indiscriminately from arrivals at Ellis Island in December, 1901, is indicative of the preponderating illiteracy of females. For example, of 100 Armenian males above 14 years of age there were 14 illiterates, and of 100 Armenian females there were 37 illiterates; of 500 Polish males there were 35.8 per cent illiterate, and of 500 Polish females there were 48.4 per cent illiterate, and so on. The table also shows the percentages of males and females of the total immigration of the selected races for the year 1901, and a computation based on these percentages of illiteracy would indicate, roughly, that of the illiterates, amounting in 1901 to 24 per cent of the total immigration according to the preceding table, probably 15 to 20 per cent only would be excluded with this discrimination.

Relative illiteracy, males and females over 14 years of age, by races.

[Computation made from ten manifests of North German Lloyd, Hamburg, and Rotterdam lines.]

Race.	Males.		Females.		Percentage of illiterates.		Percentage of immigrants, 1901.	
	Number.	Illiterate.	Number.	Illiterate.	Male.	Female.	Male.	Female.
Armenian	100	14	100	37	14	37	73.6	26.4
Bohemian and Moravian	100	2	100	3	2	3	51.6	48.4
Croatian and Slavonian	500	248	500	273	49.6	54.6	86.4	13.6
English	500	11	500	38	2.2	7.6	59.6	40.4
Finnish	100	1	100	3	1	3	64.6	35.4
German	500	45	500	57	9	11.4	58.2	41.8
Greek	100	39	100	63	39	63	97.2	2.8
Hebrew	1,000	191	1,000	431	19.1	43.1	55.7	44.3
Irish	500	22	500	32	4.4	6.4	42.1	57.9
Italian, northern	500	98	500	106	19.6	21.2	80.8	19.2
Italian, southern	500	309	500	368	61.8	73.6	78.3	21.7
Magyar	500	58	500	57	10.6	11.4	72.3	27.7
Polish	500	179	500	242	35.8	48.4	67.8	32.2
Ruthenian	300	199	300	234	66.3	78	73.8	26.2
Scandinavian	500	3	500	3	.6	.6	58.4	41.6
Scotch	100	2	100	3	2	3	60	40
Slovak	500	101	500	104	20.2	20.8	72.3	27.7
Syrian	500	276	500	403	53.2	80.6	67.2	32.8

RESTRICTIVE HEAD TAX.

An increase of the head tax from the present $1 to a larger sum is advocated by many. A tax amounting to $2 instead of the present tax of $1 would be simply a fiscal tax, for the purpose of administering the Bureau of Immigration, and would not be considered restrictive. But above this sum there is of course no limit to the rate at which the tax may be assessed, short of an amount that would be absolutely prohibitive. The province of British Columbia assesses a tax of $100 upon each Chinaman immigrating to that country, and the province of Queensland assesses $150 on Chinamen. Strong reasons can be advocated in favor of a head tax amounting to $5 or $10, on the ground that it would serve to equalize the cost of transportation as between the United States and South American ports, the fare to the latter points being $4 or $5 more from Italy, for example, than to ports of the United States.

The objection to a restrictive head tax is the assertion that the honesty and industriousness of an immigrant are not measured by the amount of money which he brings, and that those who are sharp and even criminal in their practice might easily raise the $100 and thus secure admission. This objection loses its strength in view of the fact that the head tax is not proposed as a substitute for other restrictions, but as an addition to other restrictions. Criminals who could pay the head tax would nevertheless be excluded.

Of greater weight is the sentimental objection that the United States Government can not afford to raise its revenues from the desperately poor masses of people who seek these shores. Looked upon as a revenue measure the head tax is indefensible, but looked upon as an addi-

tional means of reducing the flood of immigration the decision as to its desirability turns upon the general opinion as to whether a large immigration is or is not a benefit to the country. Like the education test, it is a means of reducing the volume of immigration as a whole by a test which leaves as little discretion as possible to the inspector of immigration.

PROHIBITION OF IMMIGRATION FOR A PERIOD OF YEARS.

The absolute prohibition of immigration is well known as having existed for two periods of 10 years each in the case of the Chinese, and a similar prohibition of European immigation is sometimes advocated for a period of five years. A proposition of this kind received a large vote, though not a majority, in one of the annual conventions of the American Federation of Labor. It does not appear that a rigid exclusion, like that referred to in the case of the Chinese, is justifiable in the case of European immigration. The Chinese are so distinctly a different race from that of the American people, so wholly incapable of assimilation, and their migration is so notorious as being only that of temporary immigrants, who do not bring their families except in limited numbers, and who intend to return to their native land with their earnings, that the policy of exclusion is justifiable, and indeed essential, for the protection of American labor and American citizenship. In the case of Europeans, even those from the more eastern sections of Europe, the urgency is not so great, and it is possible in their case to adopt such restrictions as that of an educational test and restrictive head tax which, while not prohibiting their immigration, will materially lessen the numbers of immigrants.

BONDING IMMIGRANTS.

The existing law provides for bonding a steamship company upon the condition that the immigrant who becomes a public burden within six months after landing shall be transported to the country whence he came. There is also a provision which indirectly permits the commissioner of immigration to accept a bond, if approved by the Commissioner-General and by the Secretary of the Treasury, from any person, company, corporation, charitable or benevolent association, conditioned that an alien immigrant shall not become a public charge at any time after landing. Under this provision formerly a large number of bonds were taken, but in recent years they have become more and more rare, except in cases involving separation of families. There is frequent evidence of collusion or change of names and other methods by which the security of the bonds is evaded. The provisions of the existing bonds are determined by the Commissioner-General of Immigration.

In view of these defects it has been proposed: First, that the bonds

pplicable to steamship companies and vessel owners for deportation e extended to cover a period of from two to five years, and that the ther bonds cover the entire period of maintenance of the immigrant n the public institution to which he may be committed; second, that he property of the sureties be made liable; third, that the bond be nade a matter of public record; fourth, that the immigrant giving the ond shall be required to appear semi-annually for inspection.[1]

Objections to the bonding system have been advanced, partly on he ground of the experience of Massachusetts, which is said to have ad in force a bonding provision during the period from 1799 to 1872, and that it was then repealed as being absolutely unworkable. The difficulty consists in the identification of the immigrant. It is possible, and frequently is the case, that he changes his name and that he refuses to give the date, or gives a false date, of the arrival of the steamship on which he came. One witness cites the experience of the State board of charities of Massachusetts, which in 1876 investigated 372 cases of foreign-born, who were public charges in the hospitals of the State, and discovered that only 133, or 35.7 per cent, could be identified satisfactorily to such an extent as to be turned over to the United States for deportation. It might be answered to this objection that it would be obviated to a considerable extent by the provision for a landing certificate, which is described in the section next following.

Those who advocate the bonding provision cite the experience of the Australian colonies, which it is claimed have employed this method with great success. It must be noted that the bonds required in Australia are always those of the master or owner or charterer of the vessel, and in no case are they the bonds of citizens or charitable institutions, as is the case in the American legislation. The apparent purpose of these bonding provisions in Australasia is, therefore, not to favor the convenience of the immigrant and his friends, but to provide a strong inducement for the steamship companies to decline the transportation of questionable immigrants to the colonies, and to deport them if deemed obnoxious by the immigrant authorities. It is provided that there shall be a penalty upon the vessel owner, master, or charterer for refusing to execute a bond in case he lands an excluded immigrant. In South Australia and Victoria this penalty is £100 ($500) in addition to the liability under the bond. Of course, by carrying the immigrant back to the country whence he came the vessel owner is relieved from both the bonding provisions and the penalties.

In addition to the bonds of the vessel owner or master, the colonies usually require sureties who shall be citizens of the colony, in sums equal to two or three times the amount of the bond. The amount of the bond varies; in Canada it is $300; in New South Wales not exceeding £500 ($2,500); in South Australia and Western Australia, £200

[1] Reports Industrial Commission, Vol. XV, pp. 75, 76.

($1,000); in Victoria and Tasmania, £100 ($500). The time within which the bond shall be taken is immediately upon the arrival of the vessel, after the master has displayed a list of the immigrants and before the excluded classes can be landed. However, in Tasmania the bond may be required within seven days after arrival, and in New South Wales may be required at any time within 60 days after the arrival of the ship.

The persons to whom the bonding provisions apply are lunatics, idiots, deaf and dumb, blind, or infirm, and those likely to become a public charge. South Australia adds to the foregoing also "any person who may have been convicted of any felony in any country other than South Australia."

The conditions of the bond cover, in all cases, the maintenance of the immigrant in such public or private institution, or, in the case of South Australia, in any prison or jail to which he may have been committed. The time during which the bond runs is usually five years, a period of course, far in excess of the six months stipulated in the American legislation.

The recovery of penalties under the bond is brought about in the Australian Colonies in a suit before a magistrate, in the name of the secretary-treasurer of the colony, on information of the authority having control of the public or private institution to which the alien has been admitted or committed.

LANDING CERTIFICATES.

Owing to the fact that immigrants after landing often obscure their identity, often change their names when admitted to public institutions, and frequently procure naturalization papers under false representations, it is proposed that a certificate of identification be furnished for every immigrant at the time of landing. This certificate could be made out with his photograph in such a way as to be readily preserved, and it should he presented to the court at the time of naturalization and to the authorities in charge of institutions to which the immigrant seeks admission. An identification certificate of this kind would preserve, beyond doubt, the record of the exact date of landing of the immigrant. In case the certificate were lost it could be replaced for the immigrant directly by the Bureau of Immigration. The proposition respecting landing certificates to immigrants directly was submitted, as follows, by Mr. Powderly to the Industrial Commission[1]:

That each arriving immigrant admitted to the United States should be provided with a landing certificate setting forth the name, age, sex, birthplace of the immigrant, government to which allegiance is due, the port from which the vessel sailed, the name of the vessel, the line it belongs to, the port it arrives at, and the date of

[1] Reports Industrial Commission, Vol. XV, p. 45.

landing. The immigrant should be instructed, by means of a circular, to retain the certificate for presentation when applying for naturalization papers. A record of the facts stated in the said circular as to each immigrant, to be known as the immigrant directory, should be kept for each fiscal year by the Bureau of Immigration. An act of Congress authorizing such a course of procedure, and requiring an alien presenting himself for naturalization to produce such a certificate, or a duplicate from the immigrant directory, would facilitate the work of the courts and go far toward preventing the issuance of fraudulent naturalization papers in the future.

CONSULAR INSPECTION.

At the present time there is no consular inspection at the ports of embarkation, except in the case of the Chinese, although the consuls certify to the manifests as made out by the ship's surgeon and master, but they make no examination whatever testing the right of the immigrant to enter the United States under the provisions of the immigration laws. The Bureau of Immigration, for a brief period of time, made an experiment of medical inspection at one or two European ports and at Liverpool, for vessels departing for Canadian ports, the owners of the vessels consenting to reject those whom the surgeons, under the authority of the Bureau, might proscribe.[1] This experiment has been wholly abandoned as a complete failure, since the steamship companies have not fulfilled their agreement to reject immigrants as directed by the surgeons. Of course, the surgeons had no legal authority, since they were stationed on foreign territory.

It has been advocated in many quarters that the most effective method of inspection would be that of consular inspection, not in exceptional cases, as was practiced in the above experiment, and that this inspection, while not taking the place of the staff of inspectors on the American side, yet should cover the same ground. Doubtless if the intending immigrant could be saved the expense and time of the trip across the Atlantic or Pacific, there would be less of the sentimental reasons against his exclusion. As it is, when he lands at the American port, considerations of humanity enter to qualify the rigid restrictions of the law, since the inspectors see before them a poor man who perhaps has sold his property, who has expended money and lost his time, who has undergone hardships, and who shows a pitiful eagerness to escape the oppressions of the Old World and to share in the liberties of the New. It is noteworthy that the strongest advocates of additional restrictions, when once in the presence of the immigrant at a session of the board of special inquiry, weaken in their reasoned objections to immigration, and, for humanity's sake, favor admission of questionable immigrants. These difficulties would be avoided by consular inspection, provided the consul should make inquiry such as that which is made by the agent of the steamship companies under the manifests required by

[1] Reports Industrial Commission, Vol. XV, p. 691–693.

the United States law. The steamship companies would not object because it would save the cost of deportation.

Against consular inspection it is objected that the consuls have other duties which take precedence; that this work would be detailed to a clerk who might likely be a native and not in sympathy with the American law. The consular inspection would necessitate a large increase in the consular force and would divide the responsibility between the inspection in Europe and that in the United States. It would place obstacles in the way of the immigration of those who desire to escape military duty, since it would afford public notification to the authorities of the attempted escape of their subjects. It would require a treaty with foreign countries from which vessels sail, else the inspectors would have no authority to prohibit the embarkation of noneligible emigrants.

A practical example of the conflict of jurisdiction arising from consular inspection is found in the Chinese exclusion laws. By the act of September 13, 1888, an intending emigrant is required to secure from the diplomatic or consular representative of the United States at the Chinese port a certificate on the basis of the permission granted by the Chinese Government to enter the United States. This permission is based solely on the condition that the Chinaman is not a laborer, and that he belongs to the class of "officials, teachers, students, merchants, or travelers," who are entitled to admission. The Chinaman receiving this certificate from the United States consul naturally infers that he is eligible for admission, but when he presents his certificate to the immigration inspectors at San Francisco he finds that the authority of the consular officer is not recognized by the immigration officers, and the evidence of the certificate is not enough to prevent his deportation to China.

LESSENED INDUCEMENTS BY TRANSPORTATION COMPANIES.

Considering the number of immigrants who come on prepaid tickets, and considering the fact that many of these tickets are sold on commission in different parts of the country, thus making it directly to the interest of agents to encourage the sale of tickets, it has been proposed that commissions on prepaid tickets be prohibited. Secondly, seeing that certain steamship companies, when bringing questionable immigrants to American ports, protect themselves by contract or agreement that in case the immigrant is rejected by the American authorities he shall remunerate the company in the amount of the fare for his return trip, it has been proposed by the Immigration Investigating Commission that "transportation lines shall not collect, directly or indirectly, from a debarred immigrant the expense of returning him or his belongings."

MEMBERS OF CRIMINAL ORGANIZATIONS.

Investigations made under the direction of the Industrial Commission reveal the dangerous importance to be attached to the existence

of the so-called associations of "highbinders" among the Chinese population of San Francisco. It is variously estimated that of the total number of Chinese in that city, amounting to 25,000 or 30,000, there are about 1,000 members of the highbinder associations who represent the worst class of criminals. Many of them have been compelled to flee from their native country on account of crimes committed there. They are organized under the semblance of benefit societies, but for the purpose of blackmail and violation of the immigration laws. They impose fines arbitrarily upon the hard-working and prosperous Chinese, and enforce their decrees through criminal violence and even assassination. They nullify the judgment of American courts through their own secret tribunals and their paid assassins; they make a business of bringing to the United States slave girls and coolie laborers, and through their system of intimidation it is difficult, and often impossible, to secure witnesses who will testify to the truth. It is generally believed by those who have given attention to this matter, that if the country could be rid of this criminal class of Chinese, and the highbinder societies be permanently suppressed, one of the greatest factors in the commission of fraud in the administration of the Chinese exclusion laws would be eliminated. An eminent authority asserts that fully 75 per cent of all the frauds committed at the present time against the exclusion law can be traced directly to the highbinder associations.[1] So perfect is the organization of these societies, and so thorough their reign of terrorism, that the efforts of the authorities to suppress them have never been successful. The only thing which they fear above all others, holding it in greater dread than our laws, our courts, and jails, is deportation to China. The only decisive remedy in that case is legislation through Congress, which should render aliens who are members of such societies, or any society having for its purpose the commission of crime or the violation of our laws, liable to deportation.

What is true of the highbinders of San Francisco is probably true also of certain anarchistic societies which are recruited from Europe. This phase of alien criminality has not been investigated, and there is a possibility of indiscriminate legislation should action be taken prior to a careful inquiry by the public authorities. But if, as it is believed, these associations do exist for organized violence and assassination of the public officers, legislation providing for their deportation would seem to be equally desirable with that for the deportation of the highbinders.

[1] Reports Industrial Commission, Vol. XV, p. 763.

RECOMMENDATIONS OF THE COMMISSION.

In line with the foregoing discussion of immigration and the legislation upon this subject, the Industrial Commission submits the following summary of recommendations for additional legislation. Annexed will be found the draft of a bill embodying these recommendations and submitted as suggestions for the Congress in drafting a bill, along the lines proposed, which shall provide for:

1. General revision and codification of the immigration laws, including such verbal changes as are necessary to make the existing principles of legislation effective.

This revision is necessary in order to remove ambiguities and overlapping of authority which the administration of the existing laws has shown to be necessary.

2. Increasing the head tax from $1 to $3.

In order to provide adequate revenue for more efficient inspection of aliens and deportation of the excluded classes.

3. Effective inspection along the Canadian and Mexican borders, to be secured through establishment of designated frontier ports of entry by the Secretary of the Treasury.

This is necessary in order to overcome the existing practice of manifesting to interior points in Canada those objectionable immigrants who would be rejected at the ocean ports, with the expectation that they will be able to slip across the frontier without inspection. At the present time the majority of evasions of the immigration laws is effected in this way through Canada.

4. Exclusion and deportation of anarchists.

5. Renewal and continuance of the Chinese-exclusion laws and the introduction of administrative amendments in order to render these laws less liable to evasion; but framing restrictive legislation so as not to hinder or seriously interfere with commerce with China.

6. Additions and corrections to the lists of questions contained in the manifest requiring information as to parties who have paid the passage of aliens and the total amount of money brought by each alien.

7. Substitution of the word "alien" for the word "immigrant," in such cases as are necessary, and to make it cover cabin passengers as well as steerage passengers.

8. Punishment for perjury not only of immigrants but of all witnesses who testify falsely before the board of special inquiry.

9. Amendment of the contract-labor law by expanding the meaning of the word "contract" so as to include "offers, solicitations, promises, or agreements."

This is necessary in order to relieve the Government in the enforcement of the law from the necessity of proving a contract binding in law. In all cases the existing provision is retained which permits a person in this country to send for a friend or relative who is not of the excluded classes.

10. Extension of the period of deportation to five years, the expenses during the first year to be paid by the steamship company for all aliens unlawfully landed, or for those becoming public charges from causes arising prior to migration, and the expenses for the succeeding four years to be borne by the immigrant fund, and the corporation, municipality, or institution seeking relief from the burden of such alien's support, the immigration fund to bear the expense of ocean transportation and the local authority the expense of interior transportation to the port of deportation; also, the deportation within a period of five years of public-charge cases, where the causes arise subsequent to migration, at the expense of the immigrant fund and the local authority seeking relief.

11. Requiring steamship companies to carry back aliens ordered to be deported within the proposed five years of the period of deportation.

This is especially required in the case of insane aliens, for whom, however, an attendant should be provided at the expense of the immigrant fund.

12. A landing certificate to be given to each alien upon passing the immigrant inspection, and requiring that this certificate be exhibited as a condition of naturalization, and that it may be required as a means of identification in States where the privilege of voting is granted prior to naturalization, and also in cases where citizenship is a condition of public employment.

A copy of this certificate should be kept by the Bureau of Immigration for purposes of reissue in case the original is lost. Such a certificate would greatly check naturalization frauds and would make more effective the provisions for deportation within the proposed period of five years.

13. Increasing the authority of the Commissioner-General of Immigration in the appointment of inspectors for special services in cooperation with State and local authorities in the deportation of aliens who become public charges, and otherwise simplifying and centralizing the authority of the Commissioner-General so as to make this officer the actual as well as the nominal head of the Bureau of Immigration, under the direction of the Secretary of the Treasury.

14. Authorizing the Commissioner-General, under the approval of the Secretary of the Treasury, to detail immigration officers for service in foreign countries.

15. Complete separation of the immigration service from the customs revenue service. Recommendations 13, 14, and 15 are necessary in order to locate responsibility for the enforcement of the laws.

16. Authorizing any immigration official to challenge the decision of an immigrant inspector if such decision is favorable to the admission of the alien, the challenge operating to bring the alien before the board of special inquiry for final decision upon the question of admission.

This would correct the existing evil whereby nine-tenths of the immigrants are admitted on the sole judgment of a single subordinate inspector.

17. Improved methods in the appointment and designation of members of boards of special inquiry.

In order to raise this position to a higher judicial standing, and to render the appointees more independent of the administrative branch of the service. The boards of special inquiry are the most important organ in the execution of the law, since they decide upon the admissibility of immigrants.

18. Penalties upon steamship companies for bringing aliens affected with loathsome or contagious diseases to American ports.

The evil results of bringing in such immigrants are not corrected by merely requiring the steamship companies to deport them after having brought them in, as is provided by existing laws. It is desired that this class of immigrants should not even be allowed to come in contact with other immigrants on board ship.

* ALBERT CLARKE, *Chairman.*
† BOIES PENROSE.
† THOMAS R. BARD.
† JOHN J. GARDNER.
† JNO. C. BELL.
† THEO. OTJEN.
WM. LORIMER.
ANDREW L. HARRIS.
† JOHN M. FARQUHAR.
EUGENE D. CONGER.
THOS. W. PHILLIPS.
C. J. HARRIS.
† J. L. KENNEDY.
‡ CHAS. H. LITCHMAN.
§ D. A. TOMPKINS.

*I favor an educational test.

ALBERT CLARKE.

† We dissent from the qualification on the restriction of Chinese immigration contained in the concluding clause of No. 5. We would deprecate an application of the principle of reciprocity which would make easier Chinese immigration under the guise of encouraging commerce.

BOIES PENROSE.
THOMAS R. BARD.
J. J. GARDNER.
JNO. C. BELL.
THEO. OTJEN.
WM. LORIMER.
JOHN M. FARQUHAR.
J. L. KENNEDY.
CHAS. H. LITCHMAN.

‡ While heartily concurring with the Commission in its other recommendations, except as to the dissent signed above, I think legislation to restrict immigration would be incomplete without an educational test. In the United States there is expended about $250,000,000 a year in educational work to elevate the standard of citizenship and to prepare the rising generation for its duties in the body politic. The admission of a percentage of illiterate immigration as large as shown by the most recent statistics, will not only add heavily to this expense, but is unwise and may be positively dangerous. Therefore, restriction of such immigration is imperative because of quality even more than of quantity. The good of the United States is paramount; this country is not required to injure itself under the plea of helping others or of giving asylum to the oppressed of all the earth.

CHAS. H. LITCHMAN.

§ For the protection of American civilization and American labor, it seems to me to be desirable to make the general immigration laws restrictive of all immigration that would seriously threaten to injure these.

Such general laws, properly formulated, would exclude all undesirable Chinese, as well as the undesirable of all other nations, without the necessity of discrimination against China or any other country as a nation.

The reasons for following this policy rather than one of excluding the Chinese as a people are briefly as follows:

(1) If developing trade with China should be stopped or checked it would hinder the development of those American interests whose products find a market in China—notably the cotton goods trade. The loss of this cotton goods trade or any serious hindrance in its development would tend to put the factories in the United States into more severe domestic competition and cause reductions in amount of labor and in wages in American cotton factories.

(2) It would preserve the principle of reciprocity in all relations with China, subject to general conditions that would save us injury, which general conditions would be equally applicable to our relations with all other nations.

(3) Such general laws protecting fully our standards of life and civilization, as well as protecting us from pauperism and crime from other countries, would naturally result in varying percentages of exclusions from different countries. In all cases the construction of these laws by immigration inspectors would naturally protect the labor of the whole country from competition of those who may seem to want to come to the United States for temporary residence and gain, and from those who may be willing to stay, but who would be disposed to live permanently on a lower plane than our own people,

or who would live in the United States temporarily or permanently and never become citizens or amalgamated into the civilization and life of the United States in the forms created by our own people.

(4) It is protection to the labor of the factories of the Eastern States, and to the commerce of the whole country, for the United States to maintain with China as full and free reciprocal relations as with other nations.

D. A. TOMPKINS.

PROPOSED LAW SUBMITTED AS SUGGESTIVE OF LEGISLATION.

In order to secure expert assistance in drafting a bill in the line of the foregoing recommendations, the Industrial Commission invited to a conference the Commissioner-General of Immigration and the commissioners of immigration of the ports of New York, Boston, Philadelphia, Baltimore, and San Francisco, the results of which are embodied in the following draft of a proposed law. The bill is submitted not as a recommendation of the Industrial Commission, since it has been the policy of the Commission not to draft bills for legislation upon any subject whatever, but it is submitted as containing the best expert suggestions which can be secured for the assistance of the Congress in drafting a bill, not only in line with the recommendations of the Industrial Commission providing for new features of legislation, but also for a general revision and codification such as the existing laws stand in need of. The act is designed to take the place of the existing legislation upon the subject, but provides only for the repeal of such acts and such parts of acts as are inconsistent therewith. For the sake of comparison the existing laws are printed in full, following the proposed bill, in the chronological order of their enactment, and following each section, both of the proposed law and the existing law, will be found cross references to the corresponding sections in each case. Where no cross reference is given, the entire section is either new (in the case of the proposed law), or has been dropped (in the case of existing laws).

A BILL to regulate the immigration of aliens into the United States, its Territories, possessions, and the District of Columbia.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be levied, collected, and paid a duty of three dollars for each and every passenger not a citizen of the United States or of the Dominion of Canada or of the Republic of Mexico who shall come by steam, sail, or other vessel from any foreign port to any port within the United States, or overland from any foreign country to the United States. The said duty shall be paid to the collector of customs of the port or customs district to which such alien passenger shall come, or, if there be no collector at such port or district, then to the collector nearest thereto, by the master, agent, owner, or consignee of every such vessel, or by the alien passenger, if such alien passenger comes overland, within twenty-four hours after the arrival of such vessel in port, or by such overland alien passenger upon application for admission. The money thus collected shall be paid into the United States Treasury and shall constitute a permanent appropriation to be called the immigrant fund, to be used under the direction of the Secretary of the Treasury to defray the expenses of regulating the immigration of aliens into the United States under this act and the salaries and expenses of all officers, clerks, and employees appointed for the purpose of enforcing the provisions of this act and such acts as may be hereafter passed supplementary hereto or amendatory hereof. The duty imposed by this section shall be a lien upon the vessel which shall bring such aliens to ports of the United States and shall be a debt in favor of the United States against the owner or owners of such

vessels, and the payment of such duty may be enforced by any legal or equitable remedy, and if any such alien seeking admission overland refuses or neglects to pay such duty as hereinbefore provided, he shall be refused admission to the United States; or, if found subsequently to have obtained admission thereto after such neglect or refusal, he shall be deemed and adjudged to be unlawfully in the United States and may be deported as is provided hereinafter for the deportation of other aliens found unlawfully in the United States. [Aug. 3, 1882, § 1; June 26, 1884, § 22; Aug. 18, 1894.]

SEC. 2. That the following classes of aliens shall be excluded from admission into the United States: All idiots, insane persons, paupers, persons likely to become a public charge, persons afflicted with a loathsome or with a dangerous contagious disease, persons who have been convicted of a felony or other crime or misdemeanor involving moral turpitude, polygamists, anarchists or persons who advocate the overthrow of all government or of all forms of law or the assassination of public officials; prostitutes and persons who procure or attempt to bring in prostitutes or women for the purpose of prostitution; persons whose migration to the United States has been induced by offers, solicitations, promises or agreements, parole or special, express or implied, of labor or work or service of any kind in the United States, its Territories, possessions, or the District of Columbia, and also any person whose ticket or passage is paid for with the money of another or who is assisted by others to come, unless it is affirmatively and satisfactorily shown that such person does not belong to one of the foregoing excluded classes; but this section shall not be held to prevent persons living in the United States from sending for a relative or friend who is not of the foregoing excluded classes.

Provided, That nothing in this act shall exclude persons convicted of an offense purely political not involving moral turpitude; *and provided, further*, that skilled labor may be imported if labor of like kind unemployed cannot be found in this country; and the provisions of this Section shall not be held to exclude professional actors, artists, lecturers or musicians, ministers of any religious denomination, professors for colleges or seminaries, persons belonging to any recognized learned profession, or persons employed strictly as personal or domestic servants.

SEC. 3. That the importation into the United States of women for the purposes of prostitution is hereby forbidden; and whoever shall knowingly or wilfully import or solicit the importation of any woman into the United States for the purposes of prostitution, or shall knowingly or wilfully hold, or attempt to hold, any woman for such purposes, in pursuance of such illegal importation or contract or agreement, shall be deemed guilty of a felony, and, on conviction thereof, shall be imprisoned not less than one or more than five years and pay a fine not exceeding five thousand dollars. [Mar. 3, 1875, § 3.]

SEC. 4. It shall be unlawful for any person, company, partnership, or corporation, in any manner whatsoever to prepay the transportation, or in any way to assist or encourage the importation or migration of any alien or aliens, any foreigner or foreigners, into the United States, its Territories, Possessions or the District of Columbia in pursuance of any offer, solicitation, promise, or agreement, parole or special, express or implied, made previous to the importation of such alien or aliens, foreigner or foreigners, to perform labor or service of any kind in the United States, or its territory. [Feb. 26, 1885, § 1.]

SEC. 5. That for every violation of any of the provisions of section four of this Act the person, partnership, company or corporation, violating the same, by knowingly assisting, encouraging or soliciting the migration or importation of any alien or aliens, foreigner or foreigners to the United States, its Territories, Possessions or the District of Columbia, to perform labor or service of any kind by reason of any offer, solicitation, promise or agreement, express or implied, parole or special, to or with such alien or aliens, foreigner or foreigners, shall forfeit and pay for every such offense the sum of one thousand dollars, which may be sued for and recovered by

the United States, or by any person who shall first bring his action therefor in his own name, including any such alien or foreigner thus promised labor or service of any kind as aforesaid as debts of like amount are now recovered in the courts of the United States; and separate suits may be brought for each alien or foreigner thus promised labor or service of any kind as aforesaid. And it shall be the duty of the District Attorney of the proper district to prosecute every such suit at the expense of the United States. [Feb. 26, 1885, § 3.]

SEC. 6. That any person, including the master, agent, owner or consignee of any vessel, who shall bring into or land in the United States, by vessel or otherwise, or who shall attempt to bring into or land in the United States, by vessel or otherwise, any alien not duly admitted by an immigrant inspector or not lawfully entitled to enter the United States, shall be deemed guilty of a misdemeanor and shall, on conviction, be punished by a fine not exceeding one thousand dollars, or for each and every alien so landed or attempted to be landed, by imprisonment for a term not exceeding one year, or by both such fine and imprisonment. [Feb. 26, 1885, § 4; Mar. 3, 1891, § 6.]

SEC. 7. That it shall be deemed a violation of Section Four of this Act to assist or encourage the importation or migration of any alien by a promise of employment through advertisements printed and published in any foreign country; and any alien coming to this country in consequence of such an advertisement shall be treated as coming under a promise or agreement as contemplated in Section Two of this Act, and the penalties imposed by Section Five of this Act shall be applicable to such a case; Provided, that this section shall not apply to States and Territories and the District of Columbia advertising the inducements they offer for immigration thereto, respectively. [Mar. 3, 1891, § 3.]

SEC. 8. That no transportation company, or owner or owners of vessels, shall directly or through agents, either by writing, printing or oral representations, solicit, invite or encourage the immigration of any aliens into the United States, except by ordinary commercial letters, circulars, advertisements, or oral representations, stating the sailings of their vessels, and the terms and facilities of transportation therein; and for a violation of this provision any such transportation company and any such owner or owners of vessels and the agents by them employed, shall be subjected to the penalties imposed by Section Five of this Act. [Mar. 3, 1891, § 4.]

SEC. 9. That it shall be unlawful for any transportation company, or the owners, masters or agents of any vessel, to take on board for the purpose of bringing into the United States, its Territories, Possessions or the District of Columbia, any alien afflicted with a loathsome or with a dangerous contagious disease; and that, upon the certificate of a medical officer of the United States Marine Hospital Service, whose decision shall be final in all cases as to the nature and fact of such disease, to the effect that an alien seeking admission is afflicted with a disease of the said nature, and that such disease existed at the time of embarkation of said alien, the master, agent, owner or consignee of the vessel upon which said alien is brought, shall pay to the Collector of Customs of the Customs district in which the port of arrival is located a fine of one hundred dollars, for each and every such alien found on board thereof, and no such vessel shall be granted clearance papers while such fine remains unpaid, nor shall the said fine be remitted.

SEC. 10. That upon the certificate of a medical officer of the United States Marine Hospital Service to the effect that a rejected alien is helpless from sickness, physical disability or infancy, and it appearing that such alien is accompanied by a person whose protection or guardianship is required by such rejected alien, the master, agent, owner or consignee of the vessel in which such alien and accompanying person is brought, shall be required to return with said alien such accompanying person in the same manner as vessels are required to return other rejected aliens.

SEC. 11. That the decision of the Board of Special Inquiry, hereinafter provided

for, based upon the certificate of the examining medical officer shall be final as to the rejection of aliens afflicted with a loathsome or with a dangerous contagious disease.

SEC. 12. That, upon the arrival of any alien or aliens by water at any port within the United States, or its territory, it shall be the duty of the master or commanding officer of the steamer, sailing, or other vessel having said alien or aliens on board to deliver to the immigration officers at the port of arrival lists or manifests made at the time and place of embarkation of such alien or aliens on board such steamer or vessel, which shall, in answer to questions at the top of said lists, state as to each alien the full name, age and sex; whether married or single; the calling or occupation; whether able to read or write; the nationality; the last residence; the race; the seaport for landing in the United States; the final destination, if any, beyond the port of landing; whether having a ticket through to such final destination; whether the alien has paid his own passage, or whether it has been paid by other persons or by any corporation, society, municipality, or government and, if so, by whom; whether in possession of money, and if so, how much; whether going to join a relative, and if so, what relative and his name and address; whether ever before in the United States, and if so, when and where; whether ever in prison or almshouse or supported by charity; whether a polygamist; whether an anarchist; whether coming by reason of any offer, solicitation, promise or agreement, express or implied, to perform labor in the United States; and what is the alien's condition of health mentally and physically, and whether deformed or crippled, and if so, from what cause. [Mar. 3, 1893, § 1.]

SEC. 13. That the aliens shall be listed in convenient groups and no one list or manifest shall contain more than 30 names. To each alien or head of a family shall be given a ticket on which shall be written his name, a number or letter designating the list, and his number on the list, for convenience of identification on arrival. Each list or manifest shall be verified by the signature and the oath or affirmation of the master or commanding officer or the first or second below him in command, taken before the Commissioner of Immigration or an immigrant inspector at the port of arrival, to the effect that he has caused the surgeon of said vessel sailing therewith to make a physical examination of each of said aliens, and that from the report of said surgeon and from his own investigation he believes that no one of said aliens is an idiot or insane person, or a pauper, or is likely to become a public charge, or is suffering from a loathsome or a dangerous contagious disease, or is a person who has been convicted of a felony or other crime or misdemeanor involving moral turpitude, or a polygamist, or an anarchist, or under promise or agreement express or implied to perform labor in the United States or its territory, or a prostitute, and that also, according to the best of his knowledge and belief, the information in said lists or manifests concerning each of said aliens named therein is correct and true. [Mar. 3, 1893, § 2.]

SEC. 14. That the surgeon of said vessel sailing therewith shall also sign each of said lists or manifests and make oath or affirmation in like manner before the Commissioner of Immigration or an immigrant inspector at the port of arrival stating his professional experience and qualifications as a physician and surgeon and that he has made a personal examination of the aliens named therein and that the said list or manifest, according to the best of his knowledge and belief, is full, correct and true in all particulars relative to the mental and physical condition of said aliens. If no surgeon sails with any vessel bringing aliens, the mental and physical examinations and the verifications of the lists or manifests may be made by some competent surgeon employed by the owners of the said vessel. [Mar. 3, 1893, § 3.]

SEC. 15. That in the case of the failure of the master or commanding officer of any vessel to deliver to the said immigration officers lists or manifests, verified as aforesaid, containing the information above required as to all aliens on board, there shall be paid to the Collector of Customs at the port of arrival the sum of ten dollars for

each alien qualified to enter the United States or its territory concerning whom the above information is not contained in any list as aforesaid, or said alien shall not be permitted so to enter the United States, but shall be returned like other excluded persons. [Mar. 3, 1893, § 5.]

SEC. 16. That, upon the receipt by the immigration officials at any port of arrival of the lists or manifests of aliens provided for in Sections Twelve, Thirteen and Fourteen of this Act, it shall be the duty of said officials to go or send competent assistants to the vessels to which said lists or manifests refer and there inspect all such aliens, or said immigration officials may order a temporary removal of such aliens for examination at a designated time and place, but such temporary removal shall not be considered a landing, nor shall it relieve the transportation lines, masters, agents, owners or consignees of the vessel upon which such aliens are brought to any port of the United States or its territory from any of the obligations which, in case such aliens remain on board, would, under the provisions of this Act, bind the said transportation lines, masters, agents, owners or consignees. [Mar. 3, 1891, § 8.]

SEC. 17. The physical inspection of all arriving aliens shall be made by medical officers of the United States Marine-Hospital Service, who shall certify for the information of the immigration officials and the Boards of Special Inquiry hereinafter provided for, any and all defects or diseases observed by said medical officers in any such alien or aliens, or should medical officers of the United States Marine-Hospital Service be not available, civil surgeons may be employed in such emergencies for the said service, upon such terms as may be prescribed by the Commissioner-General of Immigration, with the approval of the Secretary of the Treasury. [Mar. 3, 1891, § 8; Mar. 3, 1893, § 6.]

SEC. 18. That it shall be the duty of the officers or agents of any vessel bringing an alien or aliens to any port of the United States or its territory to adopt due precautions to prevent the landing of any alien from such vessel at any time or place other than that designated by the immigration officials at the port of arrival, and any such officer, agent or person in charge of such vessel who shall either knowingly or negligently land or permit to land any alien at any time or place other than that designated by the immigration official at the port of arrival, shall be deemed guilty of a misdemeanor and shall be punished by a fine for each alien so permitted to land, not less than one hundred or more than one thousand dollars, or by imprisonment for a term not exceeding one year or by both such fine and imprisonment. [Mar. 3, 1875, § 5; Mar. 3, 1891, § 8.]

SEC. 19. That all aliens belonging to any one of the excluded classes mentioned in Section Two of this Act shall, if practicable, be immediately sent back to the countries whence they respectively came on the vessels bringing them. The cost of their maintenance while on land as well as the expense of the return of such aliens shall be borne by the owner or owners of the vessels on which they respectively came; and if any master, person in charge, agent, owner or consignee of any such vessels shall refuse to receive back on board thereof such aliens, or shall neglect to detain them thereon, or shall refuse or neglect to return them to the foreign port from which they came, or to pay the cost of their maintenance while on land, such master, person in charge, agent, owner or consignee shall be deemed guilty of a misdemeanor and shall be punished by a fine not less than three hundred dollars for each and every such offense; and any such vessel shall not have clearance from any port of the United States or its territory while any such fine is unpaid: *Provided*, That the Commissioner-General of Immigration, with the approval of the Secretary of the Treasury, may suspend, upon conditions to be prescribed by the Commissioner-General, the deportation of any alien or aliens found to have come under promise or agreement of labor or service of any kind if, in his judgment, the testimony of such alien or aliens is necessary on behalf of the Government in the prosecution of offenders against the provisions of Sections Four or Five of this Act; but no alien duly certified to be suffering with a loathsome or with a dangerous contagious disease shall be detained to

undergo treatment for cure in hospitals in the United States or its territory. [Mar. 3, 1875, § 5; Aug. 3, 1882, § 4; Feb. 23, 1887, § 8; Mar. 3, 1891, § 10.]

SEC. 20. That any alien who shall come into the United States or its territory in violation of law or who shall be found a public charge therein from causes existing prior to landing shall be deported, as hereinafter provided, to the country whence he came at any time within one year after arrival at the expense, said expense to include cost of inland transportation to the port of deportation, of the person or persons, vessel, transportation company or corporation bringing such alien into the United States or its terrritory, or, if that cannot be so done, then at the expense of the immigrant fund provided for in Section One of this Act; and at any time within four years after the expiration of one year following such alien's arrival he shall be deported at the joint expense of the said immigrant fund and of the corporation, municipality or institution seeking relief from the burden of such alien, the former to be charged with the cost of ocean transportation and the latter to defray the expense of delivering such alien at the port of departure from this country designated by the Commissioner-General of Immigration; and any alien who becomes a public charge, from causes arising subsequent to such landing shall be deported to the country whence he came at any time within five years from such landing at the joint expense of the immigrant fund and the corporation, municipality or institution seeking relief from the burden of such alien's support, said expense to be apportioned in the manner above stated. [Oct. 19, 1888; Mar. 3, 1891, § 11.]

SEC. 21. That, in case the Secretary of the Treasury shall be satisfied that an alien has been found in the United States or its territory in violation of this Act, or of any legislation supplementary hereto, he shall cause such alien within the period of five years after landing or entry therein to be taken into custody and returned to the country whence he came, as provided in Section Twenty of this Act; or, if that cannot be done, at the expense of the immigrant fund provided for in Section One of this Act, and neglect or refusal upon the part of the masters, agents, owners or consignees of vessels in complying with the order of the Secretary of the Treasury to take on board, guard safely and return to the country whence he came any alien under the provisions of this section, shall incur the penalties prescribed in Section Nineteen of this Act. [Oct. 19, 1888; Mar. 3, 1891, §11.]

SEC. 22. The Commissioner-General of Immigration, in addition to such other duties as may by law be assigned to him shall, under the Secretary of the Treasury, have charge of the administration of all laws relating to the immigration of aliens into the United States and its territory, and shall have the control, direction and supervision of all officers, clerks and employees appointed thereunder. He shall establish such rules and regulations, with the approval of the Secretary of the Treasury, and shall prescribe such forms of bonds, reports, entries and other papers, and shall issue, from time to time, such instructions, not inconsistent with law, as he shall deem best calculated for carrying out the provisions of this Act, and for protecting the United States and aliens migrating thereto from fraud and loss, and shall have authority to enter into contracts, with the approval of the Secretary of the Treasury, for the support and relief of such aliens as may fall into distress or need public aid. And it shall be the duty of the Commissioner-General of Immigration to detail officers of the immigration service from time to time as may be necessary in his judgment to secure information as to the number of aliens detained in the penal, reformatory and charitable institutions (public and private) of the several States and Territories, the District of Columbia and other territory of the United States, and shall inform the officers of all such institutions of the provisions of law in relation to the deportation of aliens who have become public charges. [Mar. 3, 1891, sec. 7; Mar. 2, 1895.]

SEC. 23. That the Commissioner-General of Immigration shall, when in his judgment such action is necessary for the purposes of this Act, detail immigration officers for service in foreign countries, under regulations to be approved by the Secretary of the Treasury.

SEC. 24. The duties of the Commissioners of Immigration shall be of an administrative character, to be prescribed in detail by regulations prepared, with the approval of the Secretary of the Treasury, by the Commissioner-General of Immigration, through whom alone all communications to the Treasury Department in regard to immigration shall be addressed. [Aug. 18, 1894.]

SEC. 25. That immigrant inspectors shall hereafter be appointed and their compensation be fixed and raised or decreased from time to time by the Secretary of the Treasury upon the recommendation of the Commissioner-General of Immigration, and in accordance with the provisions of the Civil Service Act of January 16, 1883. Immigration officials shall have power to administer oaths and to take and consider testimony touching the right of any alien to enter the United States or its territory, and where such action may be necessary to make a written record of such testimony. The decision of any such official, if favorable to the admission of any alien, shall be subject to challenge by any immigrant official and such challenge shall operate to take the alien whose right to land is so challenged before the Board of Special Inquiry for its investigation. Every alien who may not appear to the examining inspector at the port of arrival to be clearly and beyond a doubt entitled to land, shall be detained for examination in relation thereto by a Board of Special Inquiry. [Mar. 3, 1891, § 8; Mar. 3, 1893, § 5.]

SEC. 26. That Boards of Special Inquiry shall be appointed at the various ports of arrival as may be necessary for the prompt hearing and discharge or deportation of all alien arrivals detained thereat under the provisions of law. Said Boards shall consist of three members, who shall be selected by the Commissioner-General of Immigration from the immigrant inspectors in the service, such selection to be based upon experience and upon merit, to be determined in accordance with regulations to be approved by the Secretary of the Treasury, provided that at ports where there are fewer than three immigrant inspectors: the Secretary of the Treasury, upon recommendation of the Commissioner-General of Immigration, may designate other United States officials for service on such boards of special inquiry; and officials designated or appointed for service on such boards shall be used in the order of their designation, selection or appointment, and shall not be used for other duty except and unless their services cannot be used as members of a board of special inquiry. The authority of the Board of Special Inquiry shall extend only to considering evidence touching the right of an alien to land, and all hearings before them shall be separate and apart from the public, and the decision of any two members of a board shall prevail, but may be appealed from, either by the alien or a dissenting member thereof; but no such decision shall be reversed except by the Commissioner-General of Immigration with the approval of the Secretary of the Treasury. [Mar. 3, 1891, § 1; Mar. 3, 1893, § 5.]

SEC. 27. That no bond or guaranty, written or oral, that an alien shall not become a public charge, shall be received from any person, company, corporation, charitable or benevolent society or association, unless authority to receive the same shall in each special case be given by the Commissioner-General of Immigration, with the written approval of the Secretary of the Treasury. [Mar. 3, 1875, § 5; Mar. 3, 1893, § 7.]

SEC. 28. That no suit or proceeding for a violation of the provisions of this Act shall be settled, compromised or discontinued, without the consent of the court in which it is pending entered of record with the reasons therefor. [Mar. 3, 1891, § 2.]

SEC. 29. That nothing contained in this Act shall be construed to affect any prosecution or other proceeding, criminal or civil, begun under any existing act or any acts hereby amended, but such prosecution or other proceedings, criminal or civil, shall proceed as if this Act had not been passed. [Mar. 3, 1891, § 12.]

SEC. 30. That the circuit and district courts of the United States are hereby invested with full and concurrent jurisdiction of all causes, civil and criminal, arising under any provisions of this Act. [Mar. 3, 1891, § 13.]

"SEC. 6. That the Secretary of the Treasury is hereby charged with the duty of executing the provisions of this act, and for that purpose he shall have power to enter into contracts with such State commission, board, or officers as may be designated for that purpose, by the governor of any State to take charge of the local affairs of immigration in the ports within said State, under the rules and regulations to be prescribed by said Secretary; and it shall be the duty of such State commission, board, or officers so designated to examine into the condition of passengers arriving at the ports within such State in any ship or vessel, and for that purpose all or any of such commissioners or officers or such other person or persons as they shall appoint, shall be authorized to go on board of and through any such ship or vessel; and if in such examination there shall be found among such passengers any person included in the prohibition in this act, they shall report the same in writing to the collector of such port, and such person shall not be permitted to land. [Secs. 16, 22.]

"SEC. 7. That the Secretary of the Treasury shall establish such regulations and rules, and issue from time to time such instructions not inconsistent with law, as he shall deem best calculated for carrying out the provisions of this act; and he shall prescribe all forms of bonds, entries, and other papers to be used under and in the enforcement of the various provisions of this act. [Sec. 22.]

"SEC. 8. That all persons included in the prohibition in this act, upon arrival, shall be sent back to the nations to which they belong and from whence they came. The Secretary of the Treasury may designate the State board of charities of any State in which such board shall exist by law, or any commission in any State, or any person or persons in any State, whose duty it shall be to execute the provisions of this section and shall be entitled to reasonable compensation therefor to be fixed by regulation prescribed by the Secretary of the Treasury. The Secretary of the Treasury shall prescribe regulations for the return of the aforesaid persons to the countries from whence they came, and shall furnish instructions to the board, commission, or persons charged with the execution of the provisions of this section as to the time of procedure in respect thereto, and may change such instructions from time to time. The expense of such return of the aforesaid persons not permitted to land shall be borne by the owners of the vessels in which they came. And any vessel refusing to pay such expenses shall not thereafter be permitted to land at or clear from any port of the United States. And such expenses shall be a lien on said vessel. That the necessary expense in the execution of this act for the present fiscal year shall be paid out of any money in the Treasury not otherwise appropriated. [Secs. 19, 22.]

"SEC. 9. That all acts and parts of acts inconsistent with this act are hereby repealed.

"SEC. 10. That this act shall take effect at the expiration of thirty days after its passage."

AMENDMENT to the alien contract-labor law contained in the deficiency bill, *Approved October 19, 1888 (25 Stat. L., 565).*

That the act approved February twenty-third, eighteen hundred and eighty-seven, entitled "An act to amend an act to prohibit the importation and immigration of foreigners and aliens under contract or agreement to perform labor in the United States, its Territories, and the District of Columbia," be, and the same is hereby, so amended as to authorize the Secretary of the Treasury, in case that he shall be satisfied that an immigrant has been allowed to land contrary to the prohibition of that law, to cause such immigrant, within the period of one year after landing or entry, to be taken into custody and returned to the country from whence he came, at the expense of the owner of the importing vessel; or, if he entered from an adjoining country, at the expense of the person previously contracting for the services. [Sec. 21.]

AN ACT in amendment to the various acts relative to immigration and the importation of aliens under contract or agreement to perform labor. *Approved March 3, 1891.*

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following classes of aliens shall be excluded from admission into the United States, in accordance with the existing acts regulating immigration, other than those concerning Chinese laborers: All idiots, insane persons, paupers or persons likely to become a public charge, persons suffering from a loathsome or a dangerous contagious disease, persons who have been convicted of a felony or other infamous crime or misdemeanor involving moral turpitude, polygamists, and also any person whose ticket or passage is paid for with the money of another or who is assisted by others to come, unless it is affirmatively and satisfactorily shown on special inquiry that such person does not belong to one of the foregoing excluded classes, or to the class of contract laborers excluded by the act of February twenty-sixth, eighteen hundred aud eighty-five, but this section shall not be held to exclude persons living in the United States from sending for a relative or a friend who is not of the excluded classes under such regulations as the Secretary of the Treasury may prescribe: *Provided*, That nothing in this act shall be construed to apply to or exclude persons convicted of a political offense, notwithstanding said political offense may be designated as a "felony, crime, infamous crime, or misdemeanor, involving moral turpitude," by the laws of the land whence he came or by the court convicting. [Sec. 2.]

SEC. 2. That no suit or proceeding for violations of said act of February twenty-sixth, eighteen hundred and eighty-five, prohibiting the importation and migration of foreigners under contract or agreement to perform labor shall be settled, compromised, or discontinued without the consent of the court entered of record with reasons therefor. [Sec. 28.]

SEC. 3. That it shall be deemed a violation of said act of February twenty-sixth, eighteen hundred and eighty-five, to assist or encourage the importation or migration of any alien by promise of employment through advertisements printed and published in any foreign country; and any alien coming to this country in consequence of such an advertisement shall be treated as coming under a contract as contemplated by such act; and the penalties by said act imposed shall be applicable in such a case: *Provided*, This section shall not apply to States and immigration bureaus of States advertising the inducements they offer for immigration to such States. [Sec. 7.]

SEC. 4. That no steamship or transportation company or owners of vessels shall directly or through agents, either by writing, printing, or oral representations, solicit, invite, or encourage the immigration of any alien into the United States except by ordinary commercial letters, circulars, advertisements, or oral representations, stating the sailings of their vessels and the terms and facilities of transportation therein, and for a violation of this provision any such steamship or transportation company, and any such owners of vessels, and the agents by them employed, shall be subjected to the penalties imposed by the third section of said act of February twenty-sixth, eighteen hundred and eighty-five, for violations of the provisions of the first section of said act. [Sec. 8.]

SEC. 5. That section five of said act of February twenty-sixth, eighteen hundred and eighty-five, shall be, and hereby is, amended by adding to the second proviso in said section the words "nor to ministers of any religious denomination, nor persons belonging to any recognized profession, nor professors for colleges and seminaries," and by excluding from the second proviso of said section the words "or any relative or personal friend." [Sec. 2.]

SEC. 6. That any person who shall bring into or land in the United States by vessel or otherwise, or who shall aid to bring into or land in the United States by vessel or otherwise, any alien not lawfully entitled to enter the United States shall be deemed guilty of a misdemeanor, and shall, on conviction, be punished by a fine not exceeding one thousand dollars, or by imprisonment for a term not exceeding one year, or by both such fine and imprisonment. [Sec. 6.]

SEC. 7. That the office of superintendent of immigration is hereby created and established, and the President, by and with the advice and consent of the Senate, is authorized and directed to appoint such officer, whose salary shall be four thousand dollars per annum, payable monthly. The superintendent of immigration shall be an officer in the Treasury Department, under the control and supervision of the Secretary of the Treasury, to whom he shall make annual reports in writing of the transactions of his office, together with such special reports, in writing, as the Secretary of the Treasury shall require. The Secretary shall provide the superintendent with a suitably furnished office in the city of Washington, and with such books of record and facilities for the discharge of the duties of his office as may be necessary. He shall have a chief clerk at a salary of two thousand dollars per annum, and two first-class clerks. [Sec. 22.]

SEC. 8. That upon the arrival by water at any place within the United States of any alien immigrants it shall be the duty of the commanding officer and the agents of the steam or sailing vessel by which they came to report the name, nationality, last residence, and destination of every such alien, before any of them are landed, to the proper inspection officers, who shall thereupon go or send competent assistants on board such vessel and there inspect all such aliens, or the inspection officers may order a temporary removal of such aliens for examination at a designated time and place, and then and there detain them until a thorough inspection is made. But such a removal shall not be considered a landing during the pendency of such examination. The medical examination shall be made by surgeons of the Marine Hospital Service. In cases where the services of a marine hospital surgeon can not be obtained without causing unreasonable delay, the inspector may cause an alien to be examined by a civil surgeon and the Secretary of the Treasury shall fix the compensation for such examination. The inspection officers and their assistants shall have power to administer oaths, and to take and consider testimony touching the right of any such aliens to enter the United States, all of which shall be entered of record. During such inspection after temporary removal the superintendent shall cause such aliens to be properly housed, fed, and cared for, and also, in his discretion, such as are delayed in proceeding to their destination after inspection. All decisions made by the inspection officers or their assistants touching the right of any alien to land, when adverse to such right, shall be final unless appeal be taken to the superintendent of immigration, whose action shall be subject to review by the Secretary of the Treasury. It shall be the duty of the aforesaid officers and agents of such vessel to adopt due precautions to prevent the landing of any alien immigrant at any place or time other than that designated by the inspection officers, and any such officer or agent or person in charge of such vessel who shall either knowingly or negligently land or permit to land any alien immigrant at any place or time other than that designated by the inspection officers, shall be deemed guilty of a misdemeanor and punished by a fine not exceeding one thousand dollars, or by imprisonment for a term not exceeding one year, or by both such fine and imprisonment. [Secs. 12, 13, 16, 17, 25, 26.]

That the Secretary of the Treasury may prescribe rules for inspection along the borders of Canada, British Columbia, and Mexico, so as not to obstruct or unnecessarily delay, impede, or annoy passengers in ordinary travel between said countries: *Provided*, That not exceeding one inspector shall be appointed for each customs district, and whose salary shall not exceed twelve hundred dollars per year. [Sec. 34.]

All duties imposed and powers conferred by the second section of the act of August third, eighteen hundred and eighty-two, upon State commissions, boards, or officers, acting under contract with the Secretary of the Treasury shall be performed and excercised, as occasion may arise, by the inspection officers of the United States. [Secs. 22, 23, 24, 25, 26.]

SEC. 9. That for the preservation of the peace and in order that arrests may be

made for crimes under the laws of the States where the various United States immigrant stations are located, the officials in charge of such stations as occasion may require shall admit therein the proper State and municipal officers charged with the enforcement of such laws, and for the purposes of this section the jurisdiction of such officers and of the local courts shall extend over such stations. [Sec. 33.]

SEC. 10. That all aliens who may unlawfully come into the United States shall, if practicable, be immediately sent back on the vessel by which they were brought in. The cost of their maintenance while on land, as well as the expense of the return of such aliens, shall be borne by the owner or owners of the vessel on which such aliens came; and if any master, agent, consignee, or owner of such vessel shall refuse to receive back on board the vessel such aliens, or shall neglect to detain them thereon, or shall refuse or neglect to return them to the port from which they came, or to pay the cost of their maintenance while on land, such master, agent, consignee, or owner shall be deemed guilty of a misdemeanor, and shall be punished by a fine not less than three hundred dollars for each and every offense; and any such vessel shall not have clearance from any port of the United States while any such fine is unpaid. [Sec. 19.]

SEC. 11. That any alien who shall come into the United States in violation of law may be returned as by law provided, at any time within one year thereafter, at the expense of the person or persons, vessel, transportation company, or corporation bringing such alien into the United States, and if that can not be done, then at the expense of the United States; and any alien who becomes a public charge within one year after his arrival in the United States from causes existing prior to his landing therein shall be deemed to have come in violation of law and shall be returned as aforesaid. [Sec. 20, 21.]

SEC. 12. That nothing contained in this act shall be construed to affect any prosecution or other proceeding, criminal or civil, begun under any existing act or any acts hereby amended, but such prosecution or other proceedings, criminal or civil, shall proceed as if this act had not been passed. [Sec. 29.]

SEC. 13. That the circuit and district courts of the United States are hereby invested with full and concurrent jurisdiction of all causes, civil and criminal, arising under any of the provisions of this act; and this act shall go into effect on the first day of April, eighteen hundred and ninety-one. [Sec. 30.]

AN ACT to facilitate the enforcement of the immigration and contract-labor laws of the United States. *Approved March 3, 1893.*

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, in addition to conforming to all present requirements of law, upon the arrival of any alien immigrants by water at any port within the United States, it shall be the duty of the master or commanding officer of the steamer or sailing vessel having said immigrants on board to deliver to the proper inspector of immigration at the port lists or manifests made at the time and place of embarkation of such alien immigrants on board such steamer or vessel, which shall, in answer to questions at the top of said lists, state as to each immigrant the full name, age, and sex, whether married or single; the calling or occupation; whether able to read or write; the nationality; the last residence; the seaport for landing in the United States; the final destination, if any, beyond the seaport of landing; whether having a ticket through to such final destination; whether the immigrant has paid his own passage, or whether it has been paid by other persons or by any corporation, society, municipality, or government; whether in possession of money, and if so, whether upwards of thirty dollars and how much if thirty dollars or less; whether going to join a relative, and if so, what relative and his name and address; whether ever before in the United States, and if so, when and where; whether ever in prison or almshouse or supported by charity; whether a polygamist; whether under contract, express or implied, to perform labor in the United States; and what is the immigrant's condi-

tion of health mentally and physically, and whether deformed or crippled, and if so, from what cause. [Sec. 12.]

SEC. 2. That the immigrants shall be listed in convenient groups and no one list or manifest shall contain more than thirty names. To each immigrant or head of a family shall be given a ticket on which shall be written his name, a number or letter designating the list, and his number on the list, for convenience of identification on arrival. Each list or manifest shall be verified by the signature and the oath or affirmation of the master or commanding officer or of the officer first or second below him in command, taken before the United States consul or consular agent at the port of departure, before the sailing of said vessel, to the effect that he has made a personal examination of each and all of the passengers named therein, and that he has caused the surgeon of said vessel sailing therewith to make a physical examination of each of said passengers, and that from his personal inspection and the report of said surgeon he believes that no one of said passengers is an idiot or insane person, or a pauper or likely to become a public charge, or suffering from a loathsome or dangerous contagious disease, or a person who has been convicted of a felony or other infamous crime or misdemeanor involving moral turpitude, or a polygamist, or under a contract or agreement, express or implied, to perform labor in the United States, and that also, according to the best of his knowledge and belief, the information in said list or manifest concerning each of said passengers named therein is correct and true. [Sec. 13.]

SEC. 3. That the surgeon of said vessel sailing therewith shall also sign each of said lists or manifests before the departure of said vessel, and make oath or affirmation in like manner before said consul or consular agent, stating his professional experience and qualifications as a physician and surgeon, and that he has made a personal examination of each of the passengers named therein and that said list or manifest, according to the best of his knowledge and belief, is full, correct, and true in all particulars relative to the mental and physical condition of said passengers. If no surgeon sails with any vessel bringing alien immigrants, the mental and physical examinations and the verifications of the lists or manifests may be made by some competent surgeon employed by the owners of the vessel. [Sec. 14.]

SEC. 4. That in the case of the failure of said master or commanding officer of said vessel to deliver to the said inspector of immigration lists or manifests, verified as aforesaid, containing the information above required as to all alien immigrants on board, there shall be paid to the collector of customs at the port of arrival the sum of ten dollars for each immigrant qualified to enter the United States concerning whom the above information is not contained in any list as aforesaid, or said immigrant shall not be permitted so to enter the United States, but shall be returned like other excluded persons. [Sec. 15.]

SEC. 5. That it shall be the duty of every inspector of arriving alien immigrants to detain for a special inquiry, under section one of the immigration act of March third, eighteen hundred and ninety-one, every person who may not appear to him to be clearly and beyond doubt entitled to admission, and all special inquiries shall be conducted by not less than four officials acting as inspectors, to be designated in writing by the Secretary of the Treasury or the superintendent of immigration, for conducting special inquiries; and no immigrant shall be admitted on special inquiry except after a favorable decision made by at least three of said inspectors; and any decision to admit shall be subject to appeal by any dissenting inspector to the superintendent of immigration, whose action shall be subject to review by the Secretary of the Treasury, as provided in section eight of said immigration act of March third, eighteen hundred and ninety-one. [Sec. 25.]

SEC. 6. That section five of the act of March third, eighteen hundred and ninety-one, "in amendment of the various acts relative to immigration and the importation of aliens under contract or agreement to perform labor," is hereby amended by striking out the words "second proviso" where they first occur in said section and insert-

ing the words "first proviso" in their place; and section eight of said act is hereby so amended that the medical examinations of arriving immigrants to be made by surgeons of the Marine-Hospital Service may be made by any regular medical officers of such Marine-Hospital Service detailed therefor by the Secretary of the Treasury; and civil surgeons shall only be employed temporarily from time to time for specific emergencies. [Secs. 10, 17.]

SEC. 7. That no bond or guaranty, written or oral, that an alien immigrant shall not become a public charge shall be received from any person, company, corporation, charitable or benevolent society or association, unless authority to receive the same shall in each special case be given by the superintendent of immigration, with the written approval of the Secretary of the Treasury. [Sec. 27.]

SEC. 8. That all steamship or transportation companies, and other owners of vessels, regularly engaged in transporting alien immigrants to the United States, shall twice a year file a certificate with the Secretary of the Treasury that they have furnished to be kept conspicuously exposed to view in the office of each of their agents in foreign countries authorized to sell emigrant tickets, a copy of the law of March third, eighteen hundred and ninety-one, and of all subsequent laws of this country relative to immigration, printed in large letters, in the language of the country where the copy of the law is to be exposed to view, and that they have instructed their agents to call the attention thereto of persons contemplating emigration before selling tickets to them; and in case of the failure for sixty days of any such company or any such owners to file such a certificate, or in case they file a false certificate, they shall pay a fine of not exceeding five hundred dollars, to be recovered in the proper United States court, and said fine shall also be a lien upon any vessel of said company or owners found within the United States. [Sec. 32.]

SEC. 9. That after the first day of January, eighteen hundred and ninety-three, all exclusive privileges of exchanging money, transporting passengers or baggage, or keeping eating houses, and all other like privileges in connection with the Ellis Island immigrant station, shall be disposed of after public competition, subject to such conditions and limitations as the Secretary of the Treasury may prescribe. [Sec. 31.]

SEC. 10. That this act shall not apply to Chinese persons; and shall take effect as to vessels departing from foreign ports for ports within the United States after sixty days from the passage of this act.

AN ACT making appropriations for sundry civil expenses of the Government for the fiscal year ending June 30, 1895, and for other purposes. *Approved August 18, 1894.*

That the head money from alien passengers on and after the first day of October next, collected under the Act of August third, eighteen hundred and eighty-two, to regulate immigration, shall be one dollar in lieu of the fifty cents as provided in said act. That such head money and all other receipts which shall be collected on and after July first, eighteen hundred and ninety-five, in connection with immigration shall be covered into the Treasury. And that the Commissioners of Immigration at the several ports shall be appointed by the President, by and with the advice and consent of the Senate, to hold their offices for the term of four years, unless sooner removed, and until their successors are appointed; and nominations for such offices shall be made to the Senate by the President as soon as practicable after the passage of this act. [Sec. 1.]

AN ACT making appropriations for the legislative, executive, and judicial expenses of the Government for the fiscal year ending June 30 1896, and for other purposes. *Approved March 2, 1895.* Head "Bureau of Immigration."

That the Superintendent of Immigration shall hereafter be designated as Commissioner-General of Immigration, and, in addition to his other duties, shall have charge, under the Secretary of the Treasury, of the administration of the alien contract-labor laws, etc. [Sec. 22.]

TAXATION.

I. DISTRIBUTION OF TAXATION.

The problem of the just distribution of the burden of taxation is (1) a question between the different localities or taxing districts within a State or country, and (2) a question between the individuals within each district.

The distribution of the burden between the various localities is as much a question of expenditure as of taxation. It is difficult to draw the line between those functions which are of purely local interest, and which should be performed by local authorities, and those which are of sufficient general interest to be assumed by the State or National Government. As a rule, matters assigned to local bodies are those in which local knowledge is requisite, minute supervision essential, and the cooperation of private and public agencies of value, and those in which there is less need of uniformity, or in which diversity is desirable. It has been pointed out by a witness before the Industrial Commission, however, that a law requiring stringent measures for its enforcement is apt to be enforced more effectively by a general than by a local government, and that the nearer the government is to the people the harder it is to enforce such laws, because the people feel that local authorities are subject to or dependent upon them.[1] This statement was made with reference to Federal and State administration for the regulation of diseases among animals, but perhaps has an application also to the division of work between State and strictly local administration.

The distribution of the expense of public education has become a somewhat mooted question in the United States. The complaint is made in some cities, e. g., Philadelphia and Baltimore, that in the distribution of the school fund part of the burden of supporting country schools is laid upon the shoulders of city taxpayers. In the report of the Maryland bureau of industrial statistics for 1893 it is shown that in the disbursements on account of the public-school tax every county in the State received a much larger amount than it paid into the State treasury, while the city of Baltimore paid to the State con-

[1] Reports Industrial Commission, Vol. X, p. 748.

siderably more than was returned to it for the support of its schools. This remains substantially true, according to the latest report of the Maryland controller of the treasury, except that Baltimore County, as well as the city, now pays into the State treasury for school purposes more than it receives in return.[1] In New Jersey, also, some of the rural counties have been receiving aid for school purposes mainly at the expense of Essex County, which includes Newark and the Oranges. In Ohio, Hamilton County and several of the other urban counties pay more into the 1-mill school fund than they receive from it; but the reverse is true of Cuyahoga County. This difference appears to be due to the underassessment of property, which is said to be most prevalent in the northern part of the State. These distributions of school funds are sometimes made upon a complicated basis which is evidently a compromise between the two opposing principles that public education should be (1) a purely local expense or (2) a State matter. The result is, in some cases, that both the cities and the country districts are dissatisfied. Thus, while the public press of Philadelphia has contained repeated complaints concerning that part of the burden of supporting country schools which is borne by city taxpayers, complaint is made on behalf of the rural districts that they receive only about half as much from the State fund, in proportion to the number of children, as does the city of Philadelphia. It is evident that there is no general agreement as to whether expenditure for school purposes is a matter to be distributed throughout a State on a per capita basis or a matter which may be governed by the wealth and taxpaying ability of each locality.

In the matter of road improvement, also, there is a variety of practice in this respect. While this is a task which has in the past usually been left to the localities, the present tendency is evidently in the direction of State aid. Several States have by recent legislation provided for a division of the expense for road construction between the State and the localities and individuals most directly benefited, while Massachusetts constructs some main and model roads wholly at State expense, leaving to the localities, however, the construction of most of the highways.

In the report of the Massachusetts tax commission of 1897 the radical proposal is made that all the expenses now borne by the counties be assumed by the State. It is argued that the very fact that certain expenses are now met by the county authorities indicates that they are incurred for purposes not strictly local, but of general importance. The examination of county expenditures shows that the largest items are for court expenses and the care of prisoners—matters connected with the administration of justice, and therefore quite properly charge-

[1] Annual Report of the Controller of the Treasury of the State of Maryland, 1900, p. 24.

ible to the State; other important items being county buildings, highways, truant schools, and executive salaries.

Mr. L. G. Powers, in his testimony before the Commission, calls attention to an indebtedness of the city to the country, due to the constant movement of population and of wealth from the country to the city, which exhausts the wealth of the farms; and he adds that unless something is given back in return the farming districts will be degraded and pauperized. He therefore lays down the principle that the money earned on the farm which has moved to the city must be taxed, and revenue given back to the farming districts for expenditure on country schools and roads; otherwise the country will be exhausted for the benefit of the city.

Aside from this moral indebtedness of the city to the country, it is a fair question how much of the expense for schools and roads in rural districts should be borne by the localities, and how far these should be treated as objects of State expenditure. Education would seem to be a matter of general rather than local interest, and it has been pointed out that, since the general introduction of bicycles and automobiles, rural roads are used more and more for pleasure purposes by residents in cities. It has been proposed by witnesses before the Commission that the National Government should bear part of the expense for schools and roads. The demand for national aid for schools comes chiefly from the Southern States, which find themselves unable to cope with the problem of adequate education for both whites and blacks without outside assistance.

Many of the witnesses before the Industrial Commission, including nearly all of those who have discussed the question at all, have testified that in their respective States the farming districts pay more than their just share of the State taxes. In some cases this may be due to the underassessment of urban real estate; but it has also been pointed out again and again that the personal property of the farmer is of a visible character which can not escape the assessor's eye, while the personal property of the cities is to a much greater extent of an intangible character and difficult or impossible to find, or consists of luxuries which, though visible in the houses of the taxpayers, it would require expert knowledge on the part of the assessor to value properly.

In several States, careful statistical studies have been made, comparing assessed values with estimated true values, or with values as shown by actual sales of property; and these statistics seem to warrant the general conclusion that, in the Eastern States at least, farms are usually assessed too high as compared with urban real estate. In the Central and Western States the conditions vary so greatly from place to place that no general statement of the kind can be made. This distinction between the East and the West may be explained by the abandonment of farms in the Eastern States and the fall in land values

which has accompanied the movement, coupled with the tendency of the assessors to retain the same assessed valuations from year to year; that is to say, as prices have fallen in response to the diminishing demand for Eastern farms, assessments have not been correspondingly revised. Thus it was recently found that in one of the hill towns of western Massachusetts fourteen tracts of abandoned land, sold within a few months, were assessed at much more than the selling price, and in some cases at three or four times the selling price. The average assessed valuation per acre was $6.01, as against a selling value of $2.56.[1] On the other hand, in some parts of the West there has perhaps been a corresponding failure to increase the assessments as rapidly as the value of land has risen.

It has also been shown that acre property in the vicinity of large cities, which is usually held more for speculative than for agricultural purposes, is often assessed much too low as compared either with city lots or with farms. Thus, very low assessment of undivided property has been discovered in the immediate vicinity of Philadelphia, Pittsburg, and Scranton, Pa.; Cleveland, Ohio; Chicago, Ill.; Washington, D. C.; Minneapolis and St. Paul, Minn.[2]

It is probable that there is even a greater inequality between city and country in the taxation of personal property than in that of real estate, mainly because of the differences in the nature of the property in the two cases, and partly because in the rural districts the taxpayers and their affairs are more apt to be personally known to the assessors, so that the escape of any large amount of wealth is comparatively difficult. Professor Plehn, writing with reference to California, says: "The payment each year by the farmer of from four to six cents too much on each $100 of his real estate for State taxes shrinks into ridiculous insignificance when compared with the injustice which arises from the evasion of taxation by personal property owners. This again adds peculiarly to the burden upon the farmer, the bulk of whose personal property consists of visible tangible implements, stock, and household goods."[3]

A consideration of all the evidence available on the subject seems to show that where real estate is taxed more heavily in the cities than in the country the assessment of personalty tends to counterbalance the inequality, and may even throw the balance the other way. If real estate assessments discriminate against the country in the majority of the States, as the available data seem to indicate, the assessments of real and personal property together probably discriminate against the country in a still larger number of cases.

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[1] Report of the Massachusetts Commission on Taxation, 1897, pp. 126, 127.
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be attributed in very large measure to this cause, and more relief may be expected from economy in local expenditures, with perhaps some assumption of local expenses by State governments, than from any equalization of assessments for State taxes. Nevertheless, it is only natural that the farmers should be averse to paying any part of the taxes which ought to be paid in the cities, and since the reported inequalities in assessment affect the taxes paid for county as well as State purposes, they are of considerable importance.

II. THE TAXATION OF PROPERTY.

THE GENERAL PROPERTY TAX.

The system of taxation chiefly relied upon in most of the States of the Union is a tax on all the property of individual taxpayers, with certain specified exemptions, for both State and local purposes. In most States taxpayers are expected to submit lists of their personal belongings. In a few States, however, as in New York, the assessors estimate the value of each individual's personal property in a lump sum, being assisted in the estimate by taking into consideration the taxpayer's reputation for wealth, his general mode of life, the part of the city in which he lives, and any other information which may come to their notice. In other States this method is followed in cases in which the taxpayers fail to submit their lists.

So far as taxation for State purposes is concerned, several States have partially or wholly abandoned the general property tax, leaving it to the counties and municipalities. In Vermont, taxes on real and personal property for general State purposes are levied only when specially ordered by the legislature, which, however, has been done biennially of late years; but State taxes for school and highway purposes are levied annually. In Connecticut, real and personal property have not been taxed for State purposes for many years. In New Jersey, property is not taxed for general State expenses, the only State tax apportioned on the basis of local assessments being a tax for school purposes. In Delaware, property is not taxed for general State purposes, and until 1897 the only form of personalty included in the assessment, generally speaking, was live stock; in that year, however, bonds, stocks, mortgages, etc., were made taxable by law. Wisconsin ordinarily levies no State tax on property for general State expenses, the general fund being made up of taxes on corporations and receipts from other sources; but there is a 1-mill tax for the school fund, besides taxes at lower rates for the university fund and the normal school fund, and other special taxes for educational purposes are sometimes levied.

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taxed, generally speaking, are horses, mules, cattle, and passenger vehicles for hire. Real estate, and horses, mules, and cattle are taxed only for county and local purposes, and only the proceeds of taxation on vehicles for hire and on intangible property are divided between the State and the counties. The "value of salaries, emoluments of office, posts of profit, professions, trades, and occupations" is assessed and taxed for county and local purposes. Intangible property, such as mortgages, bonds, notes, stocks, and money at interest, and also stages, omnibuses, hacks, cabs, and other vehicles for hire, are assessed for State purposes at 4 mills on the dollar, and three-fourths of the proceeds is returned to the counties. The greater part of the State revenues is derived from taxes on corporations, on collateral inheritances, on mercantile licenses, etc. In one or two counties vehicles are assessed for county as well as for State purposes.

It is at least open to question whether the amount of property owned is a fair test of the individual's ability to pay taxes; but the objection most often brought against the general property tax is its failure, in actual practice, to reach all property, and the resulting inequality between taxpayers. The existing system has been severely condemned, not only by economists and students of taxation, but also by the officials charged with the administration of the laws, and by commissions created by State legislatures to investigate the subject. Thus, a special committee on taxation and revenue of the California State senate, which reported in January, 1901, used the following language:

> From Maine to Texas and from Florida to California there is but one opinion as to the workings of the present system. That is, that it is inequitable, unfair, and positively unjust. Theoretically, all property is called upon to bear a share of the public burdens in exact proportion to its present value. In practice, that end is admittedly not even approached. Scarcely a fractional part of the property in any Commonwealth is brought to the tax rolls. This is especially true of personal property in its most coveted forms—money and credits.

The committee called attention to the very small assessment of tangible personal property in California, and added:

> This ridiculously small amount would not be important if the apparent undervaluation was uniform on all. But it is not. The small stock of merchandise, the farmer's team and milch cow are seen, counted, and assessed, while the larger possessions of those best able to pay are only guessed at, and the guess is always low enough.

One of the worst effects of the general evasion of taxation is that where taxpayers are required to submit lists of their property, the only choice in the case of each individual lies between swearing to an understatement of his property, and being taxed on an assessment which he knows to be out of all proportion to those of his neighbors. The tax on personal property thus bears most heavily upon the most conscientious and upon those whose property can not be con-

sealed, as in the case of the property of widows and orphans in the hands of trustees. Assessors are also compelled to state under oath that they have assessed property at its true cash value, when it is very well known that the true values are not even approached by the assessment.

The difficulties in the efficient administration of the general-property tax are mainly of two kinds: (1) The failure of assessors to find personal property, especially intangible personalty; and (2) underassessment of property, both real and personal.

The chief causes for the underassessment of such property as is assessed may be said to be (1) inefficiency or dishonesty on the part of the assessors, and their disinclination to incur the displeasure of their neighbors by assessing their property too high, especially where the assessors are elected and desire reelection; and (2) since State and county taxes are apportioned to the various localities in proportion to the assessed valuation of each taxing district, it is to the advantage of each district to keep its own assessment as low as possible, although the low assessment necessitates a higher rate of taxation for local purposes than would be necessary if the property were assessed at its full value. There thus arises a competition between the various taxing districts in the State to keep their assessments at least as low as those of the other districts, each naturally desiring to avoid paying more than its share of the State and county taxes. As a matter of fact, however, it has been found that the basis upon which assessments are made often varies greatly in different parts of a State, some assessors making the assessments much nearer the true value than others. In order to adjust these inequalities most of the States have county boards of equalization to adjust the assessments between the various taxing districts within the counties; and about one-half the States have created State boards of equalization, with power to raise or lower the valuation, or, in some cases, the rates of taxation of entire counties, and in a few cases with power to change the assessments of individuals also. It is generally admitted, however, that the efforts of these boards of equalization have not been successful in bringing about equality.

A few States have gone further and created State boards with more or less authority to supervise the assessments in the various counties. Thus in New York the State board of tax commissioners, besides sitting annually with certain other State officials as the board of equalization, is required to visit every county in the State at least once in two years to inquire into the methods of assessment, and to ascertain whether the local assessors discharge their duties faithfully, especially as to the assessment of property at its full value, as required by law. In New Jersey the State board of taxation is directed to investigate the methods of local assessors, to examine all cases where evasion of taxa-

tion is alleged, and to ascertain wherein existing tax laws are defective or are improperly administered. The board has power to compel the attendance of witnesses and the production of books and papers. In Wisconsin the law of 1899 provided for the appointment of a commissioner of taxation and two assistants, to have general supervision of the system of taxation throughout the State, with power to require reports from local fiscal officers, and to call upon individuals and corporations for information. The North Carolina corporation commission has recently been constituted a State tax commission, with the duty of supervising the execution of the tax laws and advising and instructing list takers in the discharge of their duties.

While the work of these boards has resulted in improved administration where they have been in existence for a number of years, their reports indicate that the assessment of property in their respective States is still far from satisfactory.

The general-property tax is better adapted to a new country or to an agricultural population where property is homogeneous and mainly tangible than to the modern industrial state. While it was well adapted to the American colonies when it was adopted, it has been outgrown as manufacture and commerce have developed. This is not equally true in all the States of the Union, and it may be possible, in some States devoted mainly to agriculture, to derive the principal revenue from the general-property tax for some time to come. Yet it is significant that in West Virginia, which contains no large cities, the tax commission of 1884 testified to the inefficiency of the tax on personal property almost as emphatically as have the commissions and permanent officials in other States since that time. The commission said:

> Things have come to such a condition in West Virginia that, as regards paying taxes on this class of property, it is almost as voluntary and is considered pretty much in the same light as donations to the neighboring church or Sunday school.

PROPOSALS FOR IMPROVED ADMINISTRATION.

The most conservative of the recommendations which are made for improving the situation looks to more stringent enforcement of the personal-property tax, especially by imposing severe penalties for failure to return property. The New Jersey State board of taxation, however, in its report for 1900, declares that public opinion is rapidly crystallizing against the wisdom of penal statutes compelling the listing of all personal property. The board takes the ground that such laws are not in harmony with our advancing civilization, and that the true remedy lies in freeing more and more personal property from taxation from time to time, and finding new sources of revenue for local and municipal purposes, together with greater economy in municipal administration.[1]

[1] Report for 1900, pp. 13, 14.

The State of Connecticut, recognizing the difficulty of taxing credits as part of the general-property tax, has provided an alternative mode of taxation at a lower rate than that upon property in general, thus attempting to obtain contributions from such property. It is provided that any person may take or send to the State treasurer any bond, note, or other chose in action, or a description of the same, and pay a tax of 2 per cent on its face value for a period of five years, or at the same rate for a greater or less number of years. The State treasurer thereupon certifies that the note or other document is exempted from taxation during the specified period. Until 1897 the rate was 1 per cent for five years. This amounts practically to an annual tax of 4 mills (formerly 2 mills), instead of the rate levied on other property, and advantage is quite generally taken of the provision.

Ohio has gone further than any other State in the attempt to enforce the tax on personal property, by the adoption of what is known as the "tax inquisitor law." Under this statute the county commissioners of any county are authorized to contract with some individual to pay him a proportion (not more than 20 per cent) of the amount of taxes collected on the personal property disclosed through his efforts. In Hamilton and Cuyahoga counties, containing the cities of Cincinnati and Cleveland, the contracts provide for the payment to the so-called inquisitor of 25 per cent of the taxes recovered, as the original law, which applied only to those counties, placed no limit upon the commission. Besides the commission paid to the inquisitor, smaller percentages are paid to public officials, making the total cost of recovering taxes by this method very heavy. The Ohio tax commission of 1893 reported that the tax inquisitor law produced not more than 2 per cent of the taxes collected, and that proportionally the greater part of the revenue collected under it came from the country counties. The conclusion of the commission was that it was not practicable to enforce the return of intangible property.

One member of the tax commission afterwards made a more exhaustive study of the working of the tax inquisitor law, from which he concluded not only that the law had not been a financial success, but also that it had resulted in driving many wealthy men out of the State. He estimated that at least $100,000,000 had been driven out of Cleveland alone within ten years by the severe tax laws, with the result that real estate was depreciated.[1]

Besides penalties for failure to return personal property, one of the favorite proposals for improving the administration of the property tax is the appointment of assessors where they are now elected. It is believed that appointed officials, not being dependent upon the taxpayers as a body for reelection, would be more independent and conscientious in assessing property.

[1] E. A. Angell, "The Tax Inquisitor System in Ohio," Yale Review, Feb., 1897.

Another means proposed for doing away with undervaluation is the apportionment of State taxes on the basis of the amount of taxes raised for local purposes in each county, instead of on the basis of the assessed valuation of the county, in order to do away with the main motive for undervaluation by assessors by doing away with the connection between the local valuation and the apportionment of the general tax. This plan has been indorsed by the New York Chamber of Commerce, by the New York State Commerce Convention, and by the League of American Municipalities, as well as by many labor organizations, and it has been actually adopted in Oregon by the legislature of 1901. The Oregon statute provides that each county shall pay such proportion of the State taxes as its average expenditures for a period of five years bear to the total expenditures in all the counties of the State. The new plan of apportionment is not to go into force until 1905. While good results may be expected from this plan, so far as the assessment of real estate is concerned, it will not make it any easier for the assessors to find personal property.

Another proposal from which still more beneficial effects may be expected is the entire separation of the sources of State and local revenues, leaving to the counties and other subdivisions the taxation of property, and assigning to the State government taxes on corporations, inheritances, etc. By doing away with the necessity for apportioning State taxes, this plan would remove the chief motive for undervaluation in the various counties, and the attempt to equalize assessments among them would be no longer necessary. The prevailing tendency of the present time is plainly in the direction of such separation of sources of revenue. Not only has the plan been adopted in Pennsylvania, Connecticut, Delaware, and, with some exceptions, in New Jersey and Wisconsin, but most of the other States now derive a large part of their revenue from other sources than the property tax. Yet the system of separate revenues, as practiced in Connecticut, has been subjected to some criticism by those who regard the levying of a State tax on property as a safeguard against extravagance, some of whom even go so far as to say that every thoughtful man wishes the State tax had not been removed in Connecticut. It is probably true that a direct State tax on property has some tendency to encourage economy on the part of the legislature, but this consideration is scarcely sufficient to outweigh the advantages of separate revenues.

TAXATION OF MORTGAGES.

In most of the States mortgages are taxed like any other personal property, no deduction being made from the assessment of the mortgaged real estate on account of the incumbrance; but it is objected to this arrangement that taxation both of the real estate at its full value

and of the mortgage constitutes double taxation. The burden of both taxes probably falls upon the borrower; in one case directly, in the other case in the form of an increased rate of interest upon his indebtedness. This double taxation of mortgaged real estate has been assigned as one of the causes of agricultural depressions, on account of the extent to which farm property has been mortgaged. A second objection to this mode of taxing mortgages is that in common with other forms of intangible personalty most of the mortgages escape taxation. The benefit of such evasions, however, is not apt to accrue to the borrower, the risk of taxation having a tendency to increase the rate of interest somewhat, though perhaps not to the full extent of the nominal tax on mortgages.

Several witnesses before the Commission have given evidence of dissatisfaction among the farmers, growing out of the taxation both of mortgages and of mortgaged real estate. Thus Mr. Clohan, a fruit grower of West Virginia, declares that the farmer really pays the tax on the real estate and pays the tax over again to the lender—that is, in increased interest—although, as a rule, the mortgages actually escape taxation. The secretary of the Ohio State board of agriculture states the situation as follows: "The owners of the intangible property actually own their property, while the man who pays the taxes on his real estate is paying for the privilege of calling it his own at some future time."

The special committee on taxation appointed by the legislature of Vermont, reporting in October, 1900, showed that, assuming that mortgagees uniformly charged the legal rate of interest, 6 per cent, their net earnings, after deducting the taxes paid on the mortgages, would vary greatly. The money of the dishonest man who dodges his taxes would bring in 6 per cent net, while if the taxes were paid, the differences in the tax rates, which vary from 45 cents to $5, would make the net income vary from 5.55 per cent to only 1 per cent, the average for the State as a whole being about 4½ per cent. The committee pointed out that wherever the tax rate was $1.70 or more the money lender could get as good or better returns by depositing money with a savings bank or trust company; and hence that where the tax rate was highest, money was drawn to the savings banks and trust companies and away from the list of property assessed for local taxation, thus tending to make the rates still higher.

The committee recommended, as a means of doing away with the double taxation of mortgaged property, that mortgages be exempted from taxation whenever the rate of interest should exceed 4½ per cent. the estimated average net income under the present system of taxation. The committee thus hoped to give the borrowers the full benefit of the exemption in reduced interest, while leaving the income of the lender about the same as before. It was recommended that in order to

avoid the placing of temporary loans for the purpose of evading taxation no loans of less than six months' time should be entitled to exemption. In order to make up the deficiency caused by the exemption of mortgages, it was recommended that the exemption of personal property on account of debts owing be discontinued.

Several States have adopted expedients for avoiding the double taxation of mortgaged real estate. Massachusetts, in 1887, adopted a statute designed to impose only one tax on real estate, the payment of which in the case of mortgaged real estate was left to be adjusted between the mortgagor and mortgagee. Any mortgagor or mortgagee of taxable realty was authorized to make to the local assessor a statement of the amount of the mortgage and the address of the mortgagee. When this is done the mortgage is to be assessed to the holder at its face value, not, however, for an amount in excess of the value of the mortgaged property. In practice, however, these statements are not made, and the universal custom in Massachusetts is for mortgages to provide that the mortgagor shall pay all taxes. The effect of the law, therefore, is virtually to exempt mortgages from taxation. The adoption of this plan in reference to the taxation of mortgages was followed by a reduction in the rate of interest, not to the extent of the average rate of taxation, but about three-fourths of 1 per cent. The joint committee on taxation of the legislature, after considering the report of the recent special tax commission on the subject, reported in favor of the continuance of this law.

California also has a law intended to prevent the double taxation of mortgaged property, but it differs from the Massachusetts statute in that the attempt is made to compel the payment of the tax on the amount of the mortgage by the mortgagee, leaving to the borrower the duty of paying a tax only upon the value of his property after deducting the amount of the mortgage; and agreements providing for the payment of the tax on the mortgage by the mortgagor are made illegal and void. In other words, a mortgage is treated as an interest in the real estate upon which it is given. While California has thus succeeded in compelling the holders of mortgages to pay the tax upon them in the first instance, the legislature has not been able to prevent the shifting of the tax to the borrowers in the form of increased interest. It has been found by careful investigation that mortgages in California, on the average, bear more than 2 per cent higher interest than other loans, although the tax rate averages only about 1.7 per cent.

For several years the Oregon law also provided that real-estate mortgages should, for purposes of taxation, be treated as land or real property and assessed to the mortgagee by the taxing district in which the land was situated, the amount of the mortgage to be deducted from the assessment of the land itself. Oregon, however, made no attempt to prevent agreements between the debtor and creditor providing for the payment of the entire tax by the former.

This mode of taxing mortgages has been challenged as a violation of the fourteenth amendment to the Constitution of the United States; but the Supreme Court of the United States has sustained it, holding that it is neither denial of the equal protection of the laws nor taking of property without due process of law, and that a State may tax mortgaged real estate at its full value, either by assessing the whole to the nominal owner, or by assessing the mortgagee for the amount of the incumbrance and the mortgagor for the remainder; it may treat a mortgage as personal property or as an interest in the real estate.[1]

In 1891 the legislature of Michigan passed an act providing that for the purpose of taxation real-estate mortgages should be treated as an interest in the land mortgaged, but this provision was repealed at the next session of the legislature, when mortgages were again made taxable as personal property.

In Missouri a constitutional amendment was adopted at the general election of 1900, providing substantially for the adoption of the California method of taxing mortgages; and accordingly the legislature, in March, 1901, passed an act providing that for the purposes of taxation a mortgage should be treated as an interest in the property affected thereby, except in the case of railroad and other quasi-public corporations, and be taxed to the owner of the mortgage by the taxing district in which the real estate is situated. Contracts obligating the debtor to pay the tax on any mortgage or on money loaned were declared null and void. It was provided that the tax might be paid by either party to the mortgage; but that if paid by the owner of the real estate, the tax should constitute a payment on the debt. This mode of taxing mortgages has been annulled by a decision of the Missouri Supreme Court declaring the constitutional amendment and statute inconsistent with the fourteenth amendment to the Federal Constitution because of the exception of quasi-public corporations.

EXEMPTION OF PERSONAL PROPERTY.

The great difficulty of reaching personal property for purposes of taxation has often led to the suggestion that the attempt to tax personalty, or at least intangible property, should be abandoned.

The principal argument for the exemption of intangible personalty, aside from that based on the impossibility of reaching it for assessment, is that most, if not all, forms of intangible property merely represent the holder's interest in tangible property, and that to tax both is therefore a species of double taxation. Thus a share of stock is merely a certificate of part ownership in the property of a corporation; a mortgage represents an equitable interest in the mortgaged property; etc.

[1] Savings and Loan Association *v.* Multnomah County, 169 U. S., 421.

The exemption of intangible personal property was advocated by the Massachusetts tax commission of 1897, but one member of the commission, in a minority report, protested against the exemption of intangible property, on the ground that it would exempt the richest men in the State and those best able to bear taxes. In order that exemption of such property should be justified in principle, it would obviously be necessary to provide some comprehensive and effective means for taxing directly the property or income represented by the various forms of personal titles; for example, if the stocks and bonds of corporations are not to be assessed to their owners, there must be an adequate system of corporation or business taxes.

The proposal to exempt personalty from taxation has never been generally popular among farmers. It has seemed to many that, as the farmers own so large a portion of the land of the country, the exemption of other forms of property and the consequent increase of the taxes on land would fall most heavily upon them. Even under the present system the complaint is made that the escape of personalty from assessment throws an undue burden of taxation upon real estate, and it is often assumed that this is necessarily a disadvantage to the farmer. But, on the other hand, the land of the farmer may be of so little value, acre for acre, as compared with city building sites, as to more than counterbalance its greater extent, so that the farmers are really a land-owning class to a less extent than the owners of city real estate. In order to determine whether farm owners as a class would gain or lose by the exemption of personal property, to be made up by heavier taxes on real estate, it is necessary to determine whether their assessments would be diminished more or less, proportionately, than the assessments of other property; that is to say, whether the present assessment of personalty is a greater or less proportion of the total assessment on farms than it is in cities and towns.

Statistical tables have been compiled, showing the assessed valuations of real and personal property, not distinguishing strictly between agricultural and other property, but approximating that distinction as nearly as possible by distinguishing between urban and rural communities, places of more than 8,000 inhabitants being counted as urban. The proportion of the total assessments represented by personal property has thus been found to be greater in the rural than in the urban districts in 36 of the 49 States and organized Territories, the reverse being true in the District of Columbia and in 12 States, all but two of which are east of the Mississippi. On the other hand, wherever the assessments are separately reported for tangible and intangible property the proportion of the intangible property was found to be greater in urban than in rural districts in a majority of cases. It is thus shown that in most of the States the rural districts would gain by the exemption of personal property from taxation, though the

exemption of intangible property alone would, in a majority of cases, relieve the cities at the expense of the country.[1] While the exemption of intangible personalty alone may therefore very well be objected to by the farmers, they have in most cases nothing to fear from the exemption of both tangible and intangible personalty. The conditions vary so much from State to State, however, that any proposed change in the taxing system should be based upon careful statistics showing what the effect will be upon the distribution of the burden of taxation.

It is more difficult to predict the effect of the exemption of personalty upon the distribution of taxes between individuals or between rich and poor than between different districts; but there is abundant evidence that it is chiefly the wealthy who escape taxation on their personal property.

Since the main reason for proposing the exemption of personal property is the difficulty of finding and assessing it, it is worth while to consider just how accurately real estate can be assessed. In the case of building sites, at least, it seems to be possible to reduce the determination of relative values to something like an exact basis. In the spring of 1896 a new system of assessment was put into operation in the city of St. Paul, by means of which the values of corner lots and of lots next corners were computed from the values of the center lots in each block. The center lots being first appraised by a committee of citizens, the values of the corner lots were found by means of ingeniously constructed mathematical diagrams. The following table shows the ratios assumed to exist between the values of the corner and second lots, and of the middle lots, where the lots are twice as long as they are broad and the corner lot has its shorter frontage on a street where the frontage is worth twice as much per foot as on the side street, the middle lot also fronting on the better street:

Ratio of poorer frontage to better.	Ratio of corner lot to middle lot.	Ratio of second lot.
.1	1.11	
.2	1.14	1.02
.3	1.17	1.03
.4	1.22	1.03
.5	1.28	1.04
.6	1.36	1.05
.7	1.48	1.06
.8	1.60	1.08
.9	1.74	1.10
1.0	1.90	1.12

While buildings are more difficult to assess than land, their value can be estimated more accurately than that of many forms of personal property. The simplest method of assessing new buildings would be to take the estimated cost as shown by the building permits, and this method might be applied even to buildings several years old by

[1] Report of the National Conference on Taxation, 1901, pp. 22, 23.

making proper allowance for depreciation. Building permits have sometimes been used for comparing actual assessments with estimated property values. There is danger, however, that if they were generally used as the basis of assessments, the estimated cost, as stated by the property owners, would be understated, so that this source of information would become less and less trustworthy.

In the St. Paul experiment of 1896 buildings were assessed in the following manner: Eighty-two men were employed for the field work and three sets of blanks were provided, one each for residences, stores with living rooms or halls above them, and for large buildings. These blanks were so prepared that it was possible to record fifty facts about a building by simply checking off words or entering figures, and it is said that the information so given was complete enough for a builder to make a contract from; yet the number of buildings examined by each man in a day averaged about twenty-five. In the meantime a committee of architects adopted a few general rules for the valuation of small and medium sized buildings, the assessments of which were proportioned, other things being equal, to the number of square feet covered. Thus the value per square foot of plain wooden dwellings was fixed as follows.

	No foundation.	Stone or brick foundation.
One story	$0.60	$0.90
One story and a half	.80	1.10
Two stories	.90	1.20

Ten cents per square foot was deducted if there was no provision for water; the same amount if a building without a foundation was over ten years old, or if a building with a foundation had no cellar or only a small one. An addition of 20 cents was made for a furnace, 25 cents for a bathroom, and 10 to 20 cents for hardwood finish.

Other tables were made for large modern houses and for barns. These tables were found to work satisfactorily for buildings up to the value of $7,000. For more expensive buildings, information as to the original cost or personal inspection by the architects was necessary.[1]

TAXATION OF LAND VALUES.

Some reformers go still further and advocate the exemption of taxes on improvements, as well as on personal property, leaving the unimproved value of land the only kind of property assessable. Those who go as far as this often advocate the abolition of other taxes, as well as

[1] Frederick R. Clow, "The St. Paul Method of Assessing Real Estate," Journal of Political Economy, December, 1896, pp. 72, 73. See also W. A. Somers, "Valuation of City Real Estate for Taxation," Municipal Affairs, June, 1901.

those on personal property, and the adoption of the tax on land values as a single tax. The more extreme advocates of the single tax, following the lead of Mr. Henry George, would absorb in taxes the entire rental value of land, even if a surplus were thereby created; others, however, would not increase the tax rate beyond the point necessary to raise the amount of revenue required. It is impossible to say how much practical difference there would be between the two plans; some of the opponents of the single tax have calculated that the entire rental value of land would be insufficient for the needs of National, State, and local governments.

The fundamental, ethical grounds upon which the single tax is advocated are that all men have an equal right to the use of land, and that since the increase of land values has been brought about by the presence of the community as a whole, individuals ought not to be permitted to retain the unearned increment. It is admitted that to absorb the entire rental value of land through taxation would virtually be confiscation of the land, and for this reason the single tax fails to secure the support of many who admit the justice of reserving to the community the unearned increment so far as any future increase of value is concerned. It is sometimes proposed to adopt the single tax gradually, so as to avoid sudden confiscation.

As a practical measure of present importance, it is best to regard the tax on land values as a substitute not for all other existing taxes, but only for the taxes now levied on real and personal property. The arguments by which this is supported are well presented in the testimony of Mr. J. H. Ralston before the Commission.[1] Mr. Ralston argues that taxes on buildings diminish the number and the size of buildings, and taxes on personal property diminish the amount of it, just as a tax on dogs diminishes the number of dogs; that taxation of buildings compels people to live in smaller and cheaper houses, and leaves unemployed the workmen who would otherwise be engaged in building larger and better ones; that on the other hand, every expenditure of money raised by taxation, which betters the community, increases the value of land; that this is true alike of street improvements, of sewers and waterworks, and of police and fire protection; that the better any one of these things is in a given locality, the more valuable is the land there; but a building is worth no more there than where the street improvements and police and fire protection are worse; and that since the money paid in taxes comes back to the owners of land and not to the owners of buildings, some part of that which is taken from the owners of buildings is taken from them unjustly and unjustly given to others. He condemns the holding of land out of use for speculative purposes as a direct damage to the community. He claims it is upon those who are so holding land, or who are holding it with improve-

[1] Reports Industrial Commission, Vol. X, pp. 1019–1038.

ments of slight value, that the increase of taxation would fall, if the single tax were adopted, and that almost all owners of homes, including farmers, would find their taxes reduced. He argues further that other taxes do not stay where they are put. The tax on the rented house is paid by the tenant; the tax on the mortgage by the borrower; the tax on the stock of goods by the consumer—because these taxes diminish the supply of houses, of money to loan, of goods in stores, and so raise their prices. But the tax on land values would not diminish the supply of land and would not enable the owner to get more for it.

The taxation of the unimproved value of land has been adopted by some of the Australasian colonies, not as a single tax, but in connection with taxes on incomes and inheritances, and with various indirect taxes. South Australia has taxed the unimproved value of land since 1884. A similar tax was introduced in New Zealand as early as 1878, before the appearance of Henry George's Progress and Poverty, but was of short duration, being repealed the following year and replaced by the property tax. In 1891, however, New Zealand took a step in the direction of taxing unimproved values by means of a land tax from which improvements to the amount of £3,000 were exempted; and in 1893 the exemption was extended to all improvements, without limit. This New Zealand land tax was imposed largely for the purpose of breaking up the large estates, which were thought to be a menace to the prosperity of the colony; and with this purpose in view it is levied at progressive rates, the ordinary land tax of 1 penny in the pound being supplemented in the case of estates worth £5,000 or more by an additional tax, increasing with the value of the estate from one-eighth of a penny to 2 pence in the pound, making the entire tax for estates worth more than £210,000 3 pence in the pound. Moreover, in the case of small holdings, the value of mortgages is deducted, but this is not done in the case of estates valued at more than £5,000. Small holdings are still further favored by a deduction of £500 from the assessed value of property not exceeding £1,500 in value, and of less amounts for more valuable holdings up to £2,500 in value. The tax on estates worth £5,000 or more is further increased by 20 per cent if the owner is a nonresident of New Zealand.

Of about £269,000, which the New Zealand land tax yielded in the year 1897-98, £73,000 represented the additional tax on estates worth more than £5,000 and the special tax on absentee landowners.

The example of New Zealand in taxing land at progressive rates was followed, in 1893, by South Australia. The land tax in that colony was for some years levied at the uniform rate of one-half penny in the pound; but in 1893 the rate was doubled for the excess above £5,000 in the value of land held by any one taxpayer. New South Wales has also adopted the tax on land values, but not at progressive rates.

In 1896 the parliament of New Zealand passed an act authorizing

municipalities by popular vote to levy the local rates upon the unimproved value of land. Several municipalities have taken advantage of this act. There is now some agitation in favor of making the system compulsory, as was done in Queensland when it was adopted there.

The movement for the taxation of land values has also made some progress in Canada. In Manitoba, by a law of 1890, all lands in municipalities improved for farming or gardening purposes are assessed at their unimproved value; and by an act of 1892 live stock and farming implements to the value of $1,500 are exempted from taxation. In British Columbia there are differences in the rates imposed upon real estate and personal property, wild lands, and improved lands, and municipalities are not allowed to assess improvements at more than half their real value. In Winnipeg, under an act of the Manitoba legislature passed in 1893, personal property has been exempted from taxation, the loss of revenue being made up by taxes on business and on corporations.

In 1899 the Colorado State senate appointed a committee of three senators to investigate the State and local revenue laws, and also the tax laws of New Zealand and the Australian colonies. The chairman of the committee, Hon. J. W. Bucklin, visited New Zealand and Australia and made a thorough study of the workings of the tax on land values. In his report he quotes the opinions of various Australasian officials, State and local, on the workings of the land-tax laws, which are in every case favorable. As a result of this investigation the committee recommended a constitutional amendment providing for local option in taxation in Colorado—that is, giving any locality power to exempt from taxation personal property and improvements. The proposal has passed the legislature of the State and is to be voted upon at the general election of 1902.

The legislature of Washington a few years ago submitted a similar proposition to the people, but it was defeated at the polls.

An attempt has been made to determine statistically for the United States the effect upon urban and rural districts, respectively, of exempting both personal property and improvements, as in the case of tangible and intangible personalty, but unfortunately the assessments of land and improvements are separately reported in comparatively few cases. So far as the figures are available, however, the ratio of the assessment of land to the aggregate assessment is greater in the urban than in the rural communities in a majority of cases, namely, in the District of Columbia and in eight States, the reverse being true in seven instances. The exemption of both personal property and improvements, therefore, would apparently in a small majority of cases leave a larger proportion of the present assessment in force in the country than in the cities.

III. OTHER FORMS OF TAXATION.

TAXES ON BUSINESS.

In many of the Southern States the general property tax is supplemented by a system of licenses or so-called privilege taxes on various kinds of business, exhibitions, etc. No attempt is made to make these taxes strictly proportional to the amount of business done, but in some cases there is a rough approximation to such proportionality; that is, the tax is graduated according to the population of the place in which the business is conducted or some other easily ascertainable fact.[1]

A special committee of the California State senate, reporting in January, 1901, proposed that, instead of depending solely upon taxes on property, a large part of the burden of taxation be shifted to business, and suggested a system of stamp taxes as the means of carrying out this idea. The argument by which the committee supported this proposal was as follows:

> What does the taxpayer receive in return for his contribution? And is that return in proportion to the value of the property which he happens to have at the end or beginning of the year? Your committee think not, but, on the contrary, we beg to submit that the blessings of government flow more nearly in proportion to the volume of business done than in the proportion to the amount of property owned. The citizen who buys and sells millions of property during the year draws more heavily upon the vitality of his government and receives more in the way of protection and assistance than he who merely holds an equal amount of property. But under our present system, the former pays on what he happens to have on hand on a given day—a day announced long in advance, by the way, so he can prepare for its coming—while the latter pays on all he has had during the entire year. One may by trade and traffic make a fortune and the day before the first Monday in March pack his grip and journey into another State, while the modest shopkeeper or farmer, whose transactions have netted but a scanty living, remains to bear the burden of the government which stood ready to defend and promote the operation of the former.

INCOME TAXES.

Several States now levy taxes on incomes, either separately or in connection with the general property tax. Massachusetts has an income tax which has survived from colonial times. The present law imposes a tax upon so much of the income of a profession, trade, or employment as exceeds $2,000, but income derived from property subject to taxation is exempted, the theory of the law being that to tax income from taxed property constitutes double taxation. While the

[1] For a list of the occupations subject to privilege tax in Texas, see Reports Industrial Commission, Vol. XI, p. 173.

Massachusetts income tax is not strictly administered, and the revenue from it is therefore less than it might be, the legislature has recently refused to repeal the law.

In Pennsylvania one of the items included in assessments for county purposes is "value of salaries, emoluments of office, offices, posts of profit, professions, trades, and occupations." These values are taxed at the same rate as the property which is taxed for county purposes. The assessment of this item for 1899 was $125,928,448, but no taxable salaries, professions, etc., were found by assessors in Philadelphia or in Lancaster County.[1]

In Louisiana also the income tax is levied as part of the property tax, one item in the assessment being "cash value of annuities, salaries, incomes, etc., of all persons, associations of persons, or business firms, and corporations not subject to license." But this partial income tax is of very little practical importance, the assessment in 1899 being only $17,360, all of which was found in two of the less important parishes of the State.

Separate income taxes have recently been imposed in Virginia and North and South Carolina.

If income can be ascertained as accurately as property it is a fairer basis of taxation, for property varies greatly in its productive capacity, some forms of wealth being entirely nonproductive; and a man whose income is derived from a profession is sometimes better able to pay taxes than one who tries to live on the income of only a moderate amount of property. While income is theoretically, therefore, the most equitable basis of taxation, the great difficulty with the income tax is practically the same as with the general property tax, namely, the impossibility of ascertaining the fortunes of individuals. It is possible that this difficulty would lead to even greater inequalities in an income tax than in a property tax, for most large property owners have at least part of their property in real estate, which can be seen and assessed, while the only incomes which could be accurately estimated are among those least able to bear taxation, namely, the incomes of persons receiving salaries. In the English income-tax law the attempt is made to avoid this difficulty as far as possible by assessing income at its source, and collecting the tax before the income reaches the hands of the taxpayer. For example, a tax on income from rent is assessed to the tenant, who pays it and deducts the amount from the rent payable to his landlord; a tax on interest is paid by the debtor and deducted from his payments to his creditor; a tax on dividends is paid by the corporation. Thus the English income tax may be said to be rather a system of separate taxes on different kinds of income than a general income tax proper, although the attempt is made in one of the schedules to include income from miscellaneous sources. This

[1] Annual Report of the Secretary of Internal Affairs, 1899, Part II, p. B. 253.

suggests that the American States, instead of imposing income taxes as such, might attain very much the same end by means of systems of business taxes levied on firms and corporations in proportion to their gross or net receipts, and perhaps also on professional incomes.

TAX ON RENTALS.

The difficulty of taxing incomes directly has led to the suggestion of a tax on the approximate incomes of individuals, based upon the rental value of the houses occupied by them. Thus the recent Massachusetts tax commission proposed a tax at the rate of 10 per cent of the rental value above $400 a year. While any attempt to reach income in this way is necessarily inaccurate, it may be that on the whole more substantial justice would be done by taxing incomes in some such indirect way as this than by attempting to assess incomes directly, and there is probably no element of expenditure more suitable for the purpose than house rent, which, in the case of those known to own houses, would of course be estimated at the rental value of the premises occupied. It has been calculated, however, that even taking large masses of people, the relation between the income and the amount paid for house rent is not constant, but that the amount paid for house rent is a larger proportion of the total in the case of the small incomes than in the case of the larger ones. In order to make this indirect tax on incomes truly proportional, therefore, it would be necessary to levy the tax at progressive rates. In fact, the Massachusetts commission virtually proposed this, for the deduction of $400 from the rental value of every house would have the effect of making the rate on the total value somewhat lower on small than on large properties; but it would probably be still more equitable to carry the principle further, either by a larger exemption or by levying the tax at two or more different percentages.

A tax on house rentals is at best subject to the objection that, like all taxes on expenditure, it varies to some extent with the individual's necessities rather than with his ability to pay taxes. It would be possible, of course, to contrive provisions of law which would reach wealthy men living in hotels and apartment houses, but a more difficult problem would be the adjustment of the tax in cases where a house is used partly for residence and partly for business purposes, as in the case of small boarding houses, physicians' offices, dressmakers' rooms, etc.; and in general the tax on rentals, while it would vary in part with the income, would also depend upon the size of the taxpayer's family. In considering the report of the Massachusetts tax commission the house committee on taxation of the general court said:

> The proposed habitation tax can not, on the whole, be commended as based on a reasonably good criterion of a man's income, because so many other things than a man's income determine the sort of house he lives in. * * * Even with an

earnest desire to avoid hypercritical objections to the carefully thought-out schemes proposed in the commissioners' report, anyone who stops and for a moment considers the neighbors in his own street or block will see at once how poor a test the rental value of the different houses is of the comparative wealth of the occupiers. The professional man with a large family will often be found occupying as good a house as the childless millionaire. As a single test, the house rental scheme would inevitably prove not only misleading but often oppressive; and the conclusions based upon it would not be nearly so accurate as those arrived at by the average assessor under the present system, which takes into account not only the house but the whole scale of living of the taxpayer, as well as his reputed resources.

INHERITANCE TAXES.

One of the most striking developments in taxation during recent years has been the rapid extension of taxation of inheritances. Pennsylvania has employed this form of taxation since 1826, and a few other States adopted it temporarily during the first half of the century; but it is only within the past ten or twelve years that it has become of general importance as a source of State revenue. At the beginning of the last decade of the nineteenth century the inheritance tax was confined to half a dozen of the Eastern States, but nearly every year since that time has witnessed the introduction of the tax in one or more States, until at present it has been adopted by more than one-half the States in the Union. The State inheritance tax laws of ten or twelve years ago applied only to collateral heirs, but at the present time several of them apply to direct heirs also; and, in some cases, progressive rates have been introduced, at least for collateral heirs, the rate of the tax increasing with the value of the estate or of the inheritance.

The taxation of inheritances has been supported by a number of distinct arguments. It has sometimes been regarded as a limitation of the right of inheritance, especially on the part of collateral heirs, or as a means of diffusing wealth by diminishing large inheritances. It is urged by some that collateral inheritance is not a natural right, but one created by law in the interest of society, and that society is therefore justified in limiting the amount of such inheritance if thereby the general public interest will be promoted. It has sometimes been argued that because of the aid and protection afforded by the State to private business, the State has a claim to part of the property of an individual at his death. Again, it has been argued that the cost of maintaining probate courts ought to be defrayed by those who receive the most direct benefit from their maintenance. This would not justify anything more than a very light tax, unless the tax were regulated according to the value of the service rendered to the heirs rather than by its actual cost. And again inheritance taxes have frequently been proposed as a method of collecting taxes which have been evaded during the lifetime of the owners of property, or explained as

a property or capitalized income tax paid once in a lifetime instead of once a year, and lightening by so much the burden of other taxes. Finally, it is pointed out that no one is better able to pay taxes than he who has received property through no exertion on his own part, and that sudden acquisition of property through inheritance increases the taxpaying ability of the heir even more than would the same amount of property received from year to year as a result of his business or professional activities.

The most effective of these arguments in the United States seems to have been that based upon the failure of the general property tax to reach personalty. It has been frequently urged that property which so generally escapes taxation year by year should at least be made to contribute something after the death of the owner, when it can no longer be concealed. In other words, the inheritance tax is regarded as an improved method of taxing personal property. This explains why the inheritance tax is sometimes applied to personal property alone, instead of to both real and personal estate, and it also serves partially to explain the adoption of progressive rates in some cases, because there is good reason for believing that the most flagrant tax dodging is, as a rule, done by the wealthy. Yet this argument, though it is the most popular mode of justifying the inheritance tax in America, is vulnerable. The inequalities of the general property tax as actually administered can never be remedied by a tax on inheritances unless it is made to apply only to property which can be shown to have escaped taxation. The inheritance tax, as it is usually found, is not proportioned to the extent to which the property tax has been evaded.

It is quite generally agreed, however, that no tax is a less serious burden to taxpayers than the inheritance tax, provided proper exemptions are made in the case of small properties passing to the immediate family of the deceased; and it is evident that the inheritance tax has become a permanent and important feature of American taxation. The most perplexing question regarding it at the present time is whether this form of taxation should be left wholly to the States or whether the National Government may properly continue to levy an additional tax upon inheritances, notwithstanding the same tax is collected in a majority of the States. The United States Government taxed successions and legacies during the civil war and for a few years thereafter, before this mode of taxation had become important in State finances, and the war-revenue act of 1898 again imposed a tax upon legacies and distributive shares of personal property exceeding $10,000 in value, exempting only the decedent's surviving husband or wife. The tax is graduated both in accordance with the degree of relationship between the decedent and the heir and also according to the value

of the property passing. For personal estates from $10,000 to $25,000 in value the following rates are established:

	Per cent.
Lineal issue, lineal ancestor, brother or sister	¾
Descendants of a brother or sister	1½
Brother or sister of a father or mother, and descendants thereof	3
Brother or sister of a grandfather or grandmother, and descendants thereof	4
More distant relatives, strangers in blood, and bodies politic or corporate	5

These rates are to be increased one-half for personal estates between $25,000 and $100,000 in value, doubled for those between $100,000 and $500,000, multiplied by 2½ for those between $500,000 and $1,000,000, and multiplied by 3 for those of more than $1,000,000. The maximum rate is, therefore, 15 per cent, which is twice as high as any inheritance tax ever before imposed in this country. Yet there was scarcely any opposition to this highly progressive scale, although Senator Lodge did criticise it because the rates were made to depend upon the whole amount of the decedent's personal estate instead of upon the size of the individual legacies.

It has taken time to get this new national inheritance tax law into working order, and in the meantime the Government has lost considerable amounts of revenue which should have been collected under it, largely from ignorance of the law on the part of individuals subject to it. It is estimated that the Government has received less than one-half the revenue which it should have received from this source. In 1901, however, Congress provided for the appointment of a special official to have charge of the administration of the inheritance tax, with the result of considerably augmenting the receipts. The enforcement of this tax is a work of such different character from that ordinarily performed by revenue agents that it has seemed best to intrust it to special officers. The number of persons engaged in its enforcement, however, is very inadequate, so that the administration of the national inheritance tax law is still inferior to the administration of some of the State inheritance-tax laws. There is no fundamental reason why the National Government should not collect the taxes as efficiently as any of the State governments.

The fear has been expressed that the national tax would have a tendency to prevent the adoption of inheritance taxes by the States, which need new sources of revenue more than the National Government; but this fear must be to a considerable extent dispelled by the fact that since the passage of the war-revenue law inheritance taxes have been adopted by a number of States, most of the new laws providing for the taxation of direct as well as collateral inheritances, and some of them adopting the principle of progressive taxation for collateral heirs. The inheritance tax legislation of the States in 1901 was more radical than in any previous year. While up to that time the highest direct inheritance tax imposed in any State was 1 per cent, with a generous exemp-

tion, the Utah law of 1901 imposes a tax of 5 per cent on both direct and collateral inheritances, while the law of Colorado makes the rate for direct heirs 2 per cent, and both Colorado and Nebraska tax large amounts passing to distant relatives as high as 6 per cent. Washington goes still farther, as far as distant relatives are concerned, by taxing amounts of more than $1,000 passing to relatives beyond the third degree 12 per cent, a rate twice as high as is imposed by any other State. Adding together this maximum rate and the maximum rate payable under the national inheritance tax, it will be seen that it is possible in certain cases for about one-fourth of an estate to be taken by these taxes.

CONSTITUTIONALITY.

Generally speaking, it may be said to have been settled by repeated judicial decisions that there is no constitutional objection to the taxation of inheritances by either the State or the National Government. The national succession tax of the civil-war period was upheld by the United States Supreme Court; but as the court in its opinion stated that the income tax could not be distinguished in principle from the succession tax, an attempt was made to have the inheritance tax of 1898 declared invalid upon the authority of the income-tax decision of 1895. The court held, however, that its former decision on the succession tax had not been overruled in the income-tax cases, and that the inheritance tax was not a direct tax within the meaning of the Constitution.[1]

The statement that the State inheritance taxes have also been sustained by the courts requires some modification. In two or three States these taxes have been held invalid on the ground that they conflicted with provisions of the State constitutions requiring equal or proportional taxation. This is the case in New Hampshire[2] and in Minnesota,[3] though in the latter State the legislature has reimposed the inheritance tax with such modifications as were necessary to meet the court's objections. In Pennsylvania, also, the direct-inheritance tax has been annulled because of a too generous exemption, the Supreme Court of the State construing the constitutional rule restricting exemption of property from taxation as applying to the inheritance tax.

RATES AND YIELD.

The following tables show the rates, exemptions, and productiveness of the various inheritance taxes levied in the United States:

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[1] Knowlton *v.* Moore, 178 U. S., 41.
[2] Curry *v.* Spencer, 61 N. H., 624.
[3] Drew *v.* Tifft, 79 Minn., 175.

Rates and exemptions prescribed by inheritance-tax laws in the United States.

State.	For collateral heirs.			For direct heirs.		
	Rate.	Exemption.	Date of law.	Rate.	Exemption.	Date of law.
	Per cent.			*Per cent.*		
Arkansas	5	.....	1901	.....	.....	.....
California	5	500	1893	.....	.....	.....
Colorado	3–6	500	1901	2	5,000	1901
Connecticut	[1]3	10,000	1889	1	10,000	1897
Delaware	[2]5	500	1869	.....	.....	.....
Illinois	2–6	2,000 / 500	1895	1	20,000	1895
Iowa	5	1,000	1896	.....	.....	.....
Maine	2½	500	1893	.....	.....	.....
Maryland	2½	500	1845	.....	.....	.....
Massachusetts	5	10,000	1891	.....	.....	.....
Michigan	5	500	1899	[3]1	5,000	1899
Minnesota	[2]5	5,000	1901	[3]1	10,000	1901
Missouri	5	600	1899	.....	.....	.....
Montana	5	500	1897	[3]1	7,500	1897
Nebraska	2–6	500	1901	1	10,000	1901
New Jersey	5	500	1892	.....	.....	.....
New York	5	500	1885	[3]1	10,000	1891
North Carolina	[4]1½–15	2,000	[4]1901	[3]2–2½	2,000	[4]1901
Ohio	[5]5	200	1898	.....	.....	.....
Pennsylvania	5	250	1826	.....	.....	.....
Tennessee	5	.....	1891	.....	.....	.....
Utah	5	10,000	1901	5	10,000	1901
Vermont	5	2,000	1896	.....	.....	.....
Virginia	5	.....	1896	.....	.....	.....
Washington	3–12	.....	1901	1	10,000	1901
West Virginia	2½	1,000	1887	.....	.....	.....
Wisconsin	[2]5	10,000	1899	[3]1	10,000	1899
United States	[3]1½–15	10,000	1898	[3]½–2½	10,000	1898

[1] Five per cent until 1897.
[2] Applying only to strangers in blood.
[3] On personal property only.
[4] From 1897 to 1899, 1½ per cent for collateral and ½ of 1 per cent for direct heirs.
[5] Until 1894, 3½ per cent, with an exemption of $10,000.

Yield of State inheritance taxes in the United States, 1891–1901.

State.	1891.	1892.	1893.	1894.	1895.
California	.....	.....	.....	1,365	32,788
Connecticut	74,759	[1]177,663	143,606	74,179	68,806
Delaware	936	1,232	.....	.....	1,582
Illinois	.....	.....	.....	.....	.....
Iowa	.....	.....	.....	.....	.....
Maine	.....	.....	1,023	12,052	42,285
Maryland	67,739	114,009	70,693	62,636	83,106
Massachusetts[2]	.....	18,855	59,430	239,369	419,428
Michigan	.....	.....	.....	.....	.....
Missouri	.....	.....	.....	.....	.....
Montana	.....	.....	.....	.....	.....
New Jersey	.....	21,599	44,248	204,695	121,339
New York	890,268	1,786,218	3,071,687	1,688,954	2,126,845
North Carolina	.....	.....	.....	.....	.....
Ohio	.....	.....	.....	.....	.....
Pennsylvania	1,230,725	1,110,603	1,124,487	869,179	1,091,993
Tennessee	.....	.....	[3]	[3]	[3]
Vermont	.....	.....	.....	.....	.....
Virginia	.....	.....	.....	.....	.....
West Virginia	314	1,004	4,656	6,622	1,026
Wisconsin	.....	.....	.....	.....	.....

[1] For fifteen months.
[2] The figures given do not include interest.
[3] Not separately reported.

Yield of State inheritance taxes in the United States, 1891–1901—Continued.

State.	1896.	1897.	1898.	1899.	1900.	1901.
California	102,671	60,667	83,550	157,735	385,362	243,36
Connecticut	135,837	77,492	133,087	115,195	165,930	222,2
Delaware	805			1,674	2,190	
Illinois			[1] 39,180	[2] 308,637	[2] 448,932	[2] 589,5
Iowa		1,884	22,651	53,585	116,491	104,85
Maine	23,178	28,684	23,347	36,266	17,980	28,90
Maryland	76,897	60,277	134,280	58,542	54,544	92,09
Massachusetts[3]	275,373	501,360	563,672	478,759	397,940	506,08
Michigan					4,579	5,2
Missouri					3,895	213,25
Montana		778	6,422	9,465	4,025	60,15
New Jersey	82,247	118,832	112,902	85,520	177,075	163,70
New York	1,796,652	1,829,942	1,997,210	2,194,612	4,334,808	4,094,08
North Carolina		98	1,120			2
Ohio	1,477	24,887	24,159	17,547	22,943	
Pennsylvania	925,717	894,741	834,856	933,575	1,167,666	1,282,08
Tennessee	[4]	[4]	[4]	[4]	61,000	57,38
Vermont		544	11,478	13,661	26,328	50,76
Virginia	2,766	1,733	14,268	67,156	21,934	28,29
West Virginia	1,436	1,813	2,507	15,503	3,840	2,53
Wisconsin					5,110	19,27

[1] For two years.
[2] Calendar year.
[3] The figures given do not include interest.
[4] Not separately reported.

Yield of the national inheritance tax.

Degrees of consanguinity and rates of tax.	1898–1899.	1899–1900.	1900–1901.
Direct line, brothers and sisters, ½ to 2½ per cent	$558,247.00	$1,315,417.03	$3,495,920.54
Descendants of brothers and sisters, 1½ to 4½ per cent	225,568.08	618,259.32	912,343.69
Brothers and sisters of father or mother, and descendants, 3 to 9 per cent	48,630.55	170,697.65	68,767.37
Brothers and sisters of grandfather or grandmother, and descendants, 4 to 12 per cent	6,721.99	8,940.69	4,849.75
Other relatives and strangers in blood, 5 to 15 per cent	396,267.63	771,176.86	730,026.83
Total	1,235,435.25	2,884,491.55	5,211,898.68

THE TAXATION OF CORPORATIONS.

The general property tax was in operation before the modern development of business corporations, and it was at first natural to extend it to the property of corporations as well as of individuals. In many cases, however, this plan was found to be very unsatisfactory. When the assessment of railroad tracks and rights of way was left to local assessors, the attempt was often made to assess such property on the same basis as the surrounding agricultural land; but the great inequalities between the assessments on the same railroad in neighboring counties showed that no rational rule of assessment had been worked out.

The most extreme case of the application of the general property tax to corporations is found not in the United States, but in Canada. The courts of Ontario have held that under the assessment act of that Province the poles, wires, etc., of a telephone company can not be valued according to their true value, having regard to the purpose for which they are used, but must be valued as materials which, if taken

payment of a debt from a solvent debtor, would have to be removed by the creditor. The section of the assessment act under which such property was assessed had been in force since the year 1853, and was quite inapplicable to the property of transportation and transmission companies. The decision in this case, which is popularly known as the "scrap-iron case," has been admitted even by counsel of the corporations themselves to indicate that the law was not in a satisfactory state. The first bill recommended by the Ontario assessment commission in January, 1901, was proposed as a remedy for this particular case.[1]

An expedient which has been commonly adopted in the United States is the assessment of the property of such corporations as railroads, telegraph companies, etc., by a State board instead of by local assessors. In some cases the value of the corporation's property has been arrived at by reference to the value of the capital stock, or, better still, the value of the capital stock and the bonded indebtedness. A somewhat more radical departure from the principles of the general property tax is found in the taxation of such corporations upon some other basis than the value of their property. Professor Seligman enumerates not less than 13 different methods of taxing corporations, not including various combinations of methods, namely: (1) Value of the property, (2) cost of the property, (3) capital stock at par value, (4) capital stock at market value, (5) capital stock plus bonded debt at market value, (6) capital stock plus total debt, both funded and floating, (7) bonded debt or loans, (8) business transacted, (9) gross earnings, (10) dividends, (11) capital stock according to dividends, (12) net earnings, (13) franchise.[2]

Many of the States have adopted gross or net earnings as the basis of taxation for certain classes of corporations, and in a few cases the taxes are levied at progressive rates. Maine taxes the gross earnings of railroads at rates ranging from one-fourth of 1 per cent for those which do not exceed $1,500 a mile to 3¼ per cent as a maximum, the rate increasing by one-fourth of 1 per cent for every $750 of earnings.

Wisconsin imposes a progressive tax on the gross earnings of railroads in lieu of all taxes upon their property used in operation, except special assessments for local improvements. The rates are—

For companies whose gross earnings are less than $1,500 a mile per annum, $5 a mile.

For companies whose gross earnings are from $1,500 to $2,000 a mile per annum, $5 a mile and also 2½ per cent of the gross earnings in excess of $1,500 a mile per annum.

On companies whose gross earnings are from $2,000 to $2,500 a mile per annum, 3 per cent.

On companies whose gross earnings are from $2,500 to $3,000 a mile per annum, 3½ per cent.

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[1] First Report of the Ontario Assessment Commission, pp. ix, x.

[2] Essays in Taxation, pp. 176–179.

tion fees and the general franchise tax. The special franchise is defined to include the value of the tangible property of the corporation situated in the streets. Amounts expended for paving or repairing the streets are not included in the deduction allowed from the tax on account of payments to municipalities.

The movement for the taxation of special franchises has extended from New York to other States. The New Jersey legislature of 1901, in compliance with a recommendation of the State board of taxation, provided for a tax of 2 per cent on the gross receipts of corporations which have the privilege of occupying streets, highways, or other public places. This tax is in lieu of the franchise tax or license fee formerly paid to the State for State purposes, but is in addition to the tax paid on the property of the companies in the local taxing districts.

A recent decision of the Illinois Supreme Court has rendered municipal franchises subject to taxation in that State without the necessity of enacting a special statute for that purpose. An Illinois statute of many years' standing provides for the assessment by the State board of equalization of the capital stock, including the franchises, of corporations over and above the assessed value of their tangible property. The assessment of such corporations has been so inadequate, however, that suit was brought by representatives of the Chicago Teachers' Federation to compel the State board of equalization to assess the capital stock and franchises of the Chicago street-railway, gas, electric-light, and telephone companies. The supreme court of the State declared that the rule of the State board of equalization providing for the assessment of the capital stock, but not of the bonded indebtedness, of the companies was not authorized and was unfair. The rule of valuation approved by the court provides for the taxation of the sum of the market value of the capital stock and the market value of the bonded indebtedness, as together representing the fair cash value of the capital stock, including the franchise. After deducting the assessed valuation of the tangible property the remainder is divided by five, in order to make the assessment correspond with that of property in general in Illinois.[1]

INTERSTATE COMPLICATIONS.

Interstate complications are of some importance in connection with the general property tax, inasmuch as the attempt is sometimes made to tax personal property both where it is situated and at the domicile of the owner; but it is in the taxation of corporations that the problem is most important and most difficult. Given the entire value of the property of a railroad, telegraph, or other corporation, the proportion

[1] State Board of Equalization *v.* People, October 24, 1901.

such property taxable within a given State is sometimes found by king that fraction of the entire property represented by the ratio hich the mileage within the State bears to the total mileage. This cririon has been upheld by the United States Supreme Court in a case ising in Ohio.[1] The mileage rule, however, is subject to the economic bjection that the mileage in various States bears no constant relation to ie amount of business done or originating in those States, which would iem to be the better criterion for distributing such taxes. In many ases the mileage rule will result in a rough approximation to a tax levied ccording to the amount of business; but it happens that several of ie principal commercial centers of the country are situated on or very ear State lines. Thus most of the railroads reaching New York City ave no mileage whatever in the State of New York, but merely ferry erminals; and a railroad from St. Louis to Eastern points would, nder the mileage rule, pay to Missouri a much smaller proportion of ll the taxes levied upon it than if the taxes were distributed accordng to the business originating in each State. So, also, the railroads unning east from Chicago have a small mileage in Illinois compared with the business done in that State, and a railroad from Chicago to Minneapolis, a large share of whose business is through traffic from Illinois to Minnesota, or the reverse, may have by far the greater part of its mileage in Wisconsin.

The Supreme Court of the United States has held that the State of Pennsylvania could not tax interest on bonds issued by a Pennsylvania railroad but held in another State. Two reasons were given for the decision: (1) That the bonds were beyond the jurisdiction of the State, and (2) that the act taxing them impaired the obligation of contracts by requiring the company to diminish the interest payable to the bondholders by the amount of the tax. The effect of the decision was apparently to make it impossible for the States to tax corporations on the basis of their total capitalization. Capital stock, indeed, could be taxed without regard to the residence of its owners, but the contrary rule was laid down for bonds.[2]

This decision seems to have been virtually overruled by a recent decision of the Supreme Court sustaining the statute of Oregon taxing mortgages on real estate in practically the same manner in which railroad bonds were taxed under the Pennsylvania law; in other words, treating mortgages as real property to be assessed to the mortgagee by the taxing district in which the land is situated. The court, in distinguishing between these two cases, treats the first of the two reasons on which the former decision was based as obiter dictum, saying that the court's remark that the mortgage conferred no interest in the land, and when held by a nonresident was beyond the jurisdiction of the State, went

[1] Adams Express Company *v.* Ohio State Auditor, 165 U. S., 194.

[2] State Tax on Foreign-held Bonds, 15 Wall., 300.

beyond what was required for the decision of the case.[1] The second reason, namely, that the act impaired the obligation of contracts by requiring the deduction of the tax from the interest due the bondholders, is left unimpaired; but it would seem to be only necessary to provide for the collection of taxes in some other manner, for example, as in the case of the Oregon mortgage, where the mortgages are assessed directly to the mortgagee and the tax is simply made a lien on the mortgagee's interest, which may be sold like any other property in case of default. The method of collecting taxes on bonds, which was declared to be unconstitutional, is doubtless more convenient than assessment and collection from the individual bondholders separately; but it is quite possible to employ the latter method, and also to require corporations to report the names and addresses of their bondholders and the amount of bonds held by each. It is therefore still possible for a State to tax corporations on the basis of their total capitalization, even where part of the stock and bonds is owned outside of the taxing State.

It has already been pointed out in the final report on Industrial Combinations[2] that Congress, having entirely within its control the regulation of interstate commerce, which control may be used for the purpose of raising revenue, has power to levy a franchise tax upon corporations engaged in interstate commerce. It was suggested that the amount of the tax vary with the net receipts of the corporation, and that it may properly be levied at progressive rates, (1) especially if it should appear that the danger of monopolistic power increases with the extent of the business done, and, in any case (2) because the larger corporations have a decided advantage in the conduct of business, so that a higher rate of taxation would be no more burdensome to them than a lower rate to a smaller corporation.

Prof. Henry C. Adams has suggested that interstate commerce be taxed by the Federal Government, leaving to the States the taxation only of the business done within their borders. He points out that the common objection of the courts to the taxation of gross earnings by the States—namely, that it constitutes a tax on interstate commerce—would thus be overcome, and he believes that the separation of traffic into State and interstate traffic would not be a difficult task. He recognizes the difficulty of separating net earnings into State and interstate, but considers that an approximation would serve the purpose. The control of corporations and the taxation of corporations, he says, may be reasonably expected to work together. The essential step to the realization of this idea he considers to be the establishment of a statistical service, which should begin its work with the organization of the bookkeeping of the corporations.[3]

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[1] Savings and Loan Society *v.* Multnomah County, 169 U. S. 421.

[2] See page 647.

[3] Science of Finance, pp. 507–518.

Professor Seligman suggests two modes by which interstate complications in taxation may be solved: (1) Uniformity of State action secured, perhaps, through Federal pressure. It is proposed that the Federal Government enact a law calling annual conventions of State commissioners, to meet with Federal commissioners to be appointed for the purpose, and to consider the various questions involved. Failing this, it is suggested (2) that the Federal Government might make itself an agency for collecting revenues from corporations engaged in interstate business, to be afterwards distributed to the States.[1]

Still another possible way out of the difficulty would be for Congress to relinquish to the State governments the right to tax interstate business according to uniform rules prescribed by Congress, preferably in accordance with the recommendations of State officers.

SUMMARY.

The inadequacy under existing economic conditions of the general property tax, so called, and its failure to reach for taxation modern forms of property, especially those of a corporate and intangible character, are recognized in all the States. It is clear that under this system there are numerous forms of wealth that do not and can not be made to bear a just share of the public burdens and which in large part evade or escape taxation, and other forms which are unjustly and disproportionately taxed as compared with other property. The inevitable result is that real estate and some forms of personalty are unduly burdened with taxation.

These conditions, under the searchlight of aggressive investigation, have engendered positive public and political agitation in many States, and have inclined people in every State, keenly alive to prevailing injustice, to vigorous criticism and denunciation of "tax-dodging" individuals and corporations. While State taxing officials, tax commissioners, and writers upon taxation, with considerable justification, inveigh against the efforts of individuals and corporations to evade and escape taxation, it should in justice be said that there is a lack of appreciation of the fact that the principal cause of these conditions is inherent in the system itself, rather than in a general desire to avoid just taxation. In all the States vast amounts of property are virtually exempt from taxation, and other property is unjustly and grievously burdened through the operation of bad systems and injudicious laws. It is useless to inveigh against tax dodgers and faulty administration, unless the methods of taxation are changed.

Representatives of corporate management and others are animated usually not so much by the fear of "equal taxation" as of unequal

[1] Reports Industrial Commission, Vol. IV, pp. 602, 608, 609.

taxation under prevailing systems. When methods are adopted based upon correct principles that will subject corporations and intangible forms of property to just and proportionate burdens as to public revenue, the opposition to enforcement of tax laws and the efforts to evade their burdens will be abated, and the correct methods will be more easily enforced.

The remedies seem to lie in the adoption by the several States, working in harmony so far as may be, of new and modern methods for the taxation of special forms of property, separate and distinct from the general property tax, in respect to both valuations and rates of taxation.

There has been more or less departure in some States from the general property tax with respect to corporations, and toward the adoption of special methods of taxing them. There is a marked tendency in several States toward making earning power the basis of taxation for quasi-public corporations. Properly directed, this must be regarded as a correct principle and capable of practical application to all corporations. There is, however, a strong inclination to cling to the old system in part and to use this principle in conjunction with some feature or factor of the property tax, particularly to use earning power as a basis of property valuations. The mistake is often made of using earning power, not as a test of faculty or ability to pay revenue, but as an arbitrary, fictitious basis of valuation. This is apt to augment rather than diminish existing evils.

The principles that taxes should be levied in proportion to ability to pay, and, even under the general property tax, upon persons rather than upon property, are generally recognized. Under existing economic conditions property is no longer regarded as an adequate test of ability to contribute to the support of the government; hence the marked tendency to apply different tests to owners of special classes of property. There is a growing class of citizens which receives large incomes or salaries and enjoys all the advantages of society and good government, but is practically exempt from taxation under existing systems. This class is receiving and must continue to receive special attention in the revision or reformation of taxing systems in the several States. While a tax upon individual incomes is universally conceded to be just and equitable, it has been quite generally received with disfavor and regarded as impracticable in its application. It is apparent, however, to the careful student of commonwealth taxation that, because of its justice, the idea of a limited supplementary State income tax is growing in favor and coming to be more generally regarded as a practical measure under State supervision.

Such a tax has always prevailed in Massachusetts, the present law of that Commonwealth, which the legislature recently refused to repeal, imposing a tax upon so much of the income of a profession, trade, or employment as exceeds the sum of $2,000, but exempting income

erived from property subject to taxation. While this law is imperfectly administered, it is not infrequently suggested by eminent uthorities upon the subject that a supplementary income tax of that haracter, imposed directly by the States under modern methods of dministration, would become an efficient and practical source of State evenue. In conjunction with the taxation of corporations it seems estined to receive increasing consideration.

A mistaken conception of the property-tax theory of "uniformity" nd a general disposition to apply the misleading iron rule of "equal axation" to all forms of property exist very generally. As bearing pon this observation, we quote the following from the case of Pacific Express Company *v.* Seibert (142 U. S., 351):

> This court has repeatedly laid down the doctrine that diversity of taxation, both with respect to the amount imposed and the various species of property selected either for bearing its burdens or for being exempt from them, is not inconsistent with a perfect uniformity and equality of taxation in the proper sense of those terms, and that a system which imposes the same tax upon every species of property, irrespective of its nature, condition, or class, will be destructive of the principle of uniformity and equality in taxation and of a just adaptation of property to its burdens.

Because of the uncertainty, and in some cases of the low rates, of income from intangible property, and partly because of its character, it is probably unjust to tax intangible and tangible property at the same uniform rate. The constitutional provisions in many States, which require that all property shall be taxed at a uniform rate, were generally adopted before intangible property began to assume large proportions. Because of such provisions equitable taxation and uniformity in State systems, however desirable, may be impracticable except through constitutional amendments.

We recommend—

RECOMMENDATIONS OF THE COMMISSION.

1. That the States abandon the general property tax and raise their revenues by taxes upon corporations, inheritances, and incomes, supplemented when necessary by indirect taxation; that local revenues be raised by taxes on real estate and personalty under the general property-tax system, as at present.

2. That corporations, public-service and other, be taxed by State boards, at rates fixed by legislation, upon the value of their franchises assessed according to the actual value of their stocks and bonded debts, less the value of their real estate as assessed locally, and that the real estate owned by them be taxed locally as other real estate is taxed.

The revenues received from public-service corporations should be returned to the municipalities where the properties of said corporations are located or operated.

3. That the system of levying graduated taxes upon inheritances be adopted by those States which do not now employ it, and that it be abandoned by the Federal Government.

4. That taxes upon corporations, inheritances, etc., be supplemented by a graduated tax upon incomes, to be levied and collected by the State.

5. That notes, mortgages, and other like property be taxed by the State at full value, but at low fixed rates, through appropriate listing and recording systems similar to the Pennsylvania method, and as proposed by the New York legislative committee of 1899–1900. Such taxes and other revenues of the States in excess of their needs should be distributed to counties or localities upon some equitable basis.

6. That to promote greater uniformity in State taxation and to consider interstate problems connected therewith the States provide for national conventions of fiscal officers.

7. That the general property tax upon real estate and tangible personalty be supplemented by special taxes or licenses upon any business that is not by the general property tax made to bear its just share of the local public burden.

ALBERT CLARKE, *Chairman.*
BOIES PENROSE.
THOMAS R. BARD.
JNO. C. BELL.
THEO. OTJEN.
WM. LORIMER.
ANDREW L. HARRIS.
JOHN M. FARQUHAR.
EUGENE D. CONGER.
THOS. W. PHILLIPS.
J. L. KENNEDY.
CHAS. H. LITCHMAN.
*D. A. TOMPKINS.

*We regard recommendation No. 1 as too new and not sufficiently tried in practice for unqualified recommendation under all conditions.

We dissent from any proposition to tax, as income, book profits of individuals, firms, or corporations, except such as may be retired from business, divided or declared as dividends, for the following reasons:

The determination of undivided profits, besides being difficult, would submit competitive businesses to injurious exhibits of details, would unduly constrain business men to report, in periods of depression, more profits than made in order to sustain credit, would often tax apparent profits which later might have shrunk to nothing; and for other reasons.

C. J. HARRIS.
D. A. TOMPKINS.

I can not sign these recommendations because of No. 2. It either asses the personal property owned by corporations, including railroads, as "franchise," or omits all provisions for taxing such personal property.

A franchise is granted by the State, and is a State, not a local, matter. If a taxable value is bestowed it is given by the State, and not by one locality or a number of localities. I know of no recognized principle on which the franchise tax of such a public-service corporation as a railroad should be distributed to the municipalities through which it happens to pass. If distributed to all parts of the State, it is the same in equality of benefit as if assessed for the State or the municipalities.

Without having the Pennsylvania and proposed New York method before me, I can not determine whether No. 5 contemplates double taxation on notes, mortgages, etc. The word "personalty" in No. 1 includes, under some if not most systems, notes, mortgages, etc. I am opposed to double taxation against indebtedness.

It seems to me that while No. 1 recommends the abandonment of the personal property tax system, No. 7 contemplates its retention. I favor the additional tax proposed in No. 7 for the benefit of the places where the business is located.

J. J. GARDNER.

IRRIGATION.

EXISTING CONDITIONS AND NEEDS.

VACANT PUBLIC LANDS.

It is evident that as the population of the country increases there ill be a steadily growing pressure for land, especially in times of epression, when men seek work in vain. At such times in the past ie vacant public lands have afforded a great outlet for the active, rogressive element in our population. It is now extremely difficult, owever, for a settler to go out upon the public domain and make a ome. The Yearbook of the Department of Agriculture for 1899 ays, "All the best parts of the public domain have been appropriated, and comparatively very little good agricultural land remains open o settlement." Although one-third of the whole United States, xclusive of Alaska and outlying possessions, consists of vacant public and, much of which is quite fertile, yet there are few localities where omes can now be made by even the most sturdy pioneer. This is not ecause the soil is rough or infertile, but is due to the lack of the one ssential element—water. There is water to be had, but the easily vailable sources have already been employed in the reclamation of mall portions of the Government land.

WHAT PRIVATE ENTERPRISE AND THE STATES HAVE DONE.

Private enterprise has already accomplished what it can in the utilization of the smaller streams, but there still remain great rivers and torrential floods, the control of which is beyond the possibility of individuals or corporations seeking profitable financial enterprises. The work of reclamation, if done at all, must be through public agencies.

The different States have done a great deal to develop their own irrigation systems. In California millions of dollars had been invested prior to the controversy over riparian rights. Private parties have likewise applied themselves to improving the desirability of their lands, but recent decisions have put a check upon the extension of irrigation. Investors in canals are fearful of their rights in the premises. The decisions of the State and Territorial courts have, furthermore, com-

plicated the difficulty until it seems that some action on the part of the Federal Government is necessary for the development of much of this territory. Private capital appears to have reached the limit of its usefulness where the water supply is a matter involving the rights of different States, and the States themselves are more or less loath to proceed in the matter, because they lack the resources for the undertaking. The expense of maintaining a system of State irrigation would not only be heavy, but the advantages derived from it would, to some extent, be shared by other States without any outlay on their part.

DEMAND FOR RECLAMATION.

Already there is a widespread demand on the part of the citizens of the country, the owners of this vast domain, for the adoption by the Government of some policy leading to the ultimate reclamation of the West, such as will permit the largest possible number of homes. The labor organizations see in this an outlet for overcrowded conditions. The manufacturing, jobbing, and transportation interests of the country appreciate the overwhelming importanee of this great home market. Farmers in different parts of the country see here opportunities for homes for the younger members of their families, and recognize that the agricultural prosperity of the country rests largely upon increased growth of manufactures and consequently enlarged demand for products.

COMPETITION OVERESTIMATED.

The development of the Western lands must in any event proceed slowly, and the agricultural products of the arid region do not and never can compete materially with those of the East, since the quality and identity of the crops and the time when placed upon the market differ from those of any other section of the country.

The importance of this potential competition is overestimated by some. They do not appreciate the fact that wheat, corn, and other staple products of the East are not raised by irrigation, save for the most limited local consumption, and probably never will be, because the cost of cultivation under irrigation is such that only the higher-priced products can be raised. The citrus fruits and the green and dried fruits differ from those of the East, and have in no respect reduced the price or limited the product of apples, peaches, or any other fruit of the East. For sugar beets the arid climate has been found especially suitable, but the amount raised under irrigation, even under the most favorable circumstances, can not seriously influence the sugar market for many years to come.

PROPOSED NATIONAL POLICY.

The proposed policy of national irrigation is not, however, along the line of irrigating the land, but rather of making possible the utili-

ation by private enterprise of the vast extent of fertile lands, and f the great floods and rivers which now go to waste. If these waters, ost of which are interstate in character, are conserved and regulated y the National Government, it will then be possible for able-bodied en making homes upon the land to build their own works for irri-ation. Such works are not needed outside of the arid region, for lsewhere nature has provided an amply supply of water flowing hroughout the yeai, and the difficulties of procuring it are trivial ompared with those within the third of the United States which ncludes the vacant public lands.

Reclamation of the vacant public lands, made possible by conservation of the water supply, will open opportunities gradually for the creation of small homes upon intensively cultivated farms, as has been shown by the history of the Mormons, the Greeley colony in Colorado, and the Salvation Army colonies in Colorado and California. This offers a means of relief for the congested population around large cities. It is not believed that the "submerged tenth" can be put upon the land, but above this part of the population are to be found, as shown by the Salvation Army colonies, thousands of capable men and women who are eager to make homes and can obtain sufficient means to secure a start in life whenever opportunity offers.

HISTORY AND SCOPE OF IRRIGATION.

Testimony given before the Industrial Commission shows that irrigation by English-speaking people in the United States began half a century ago among the Mormons in Utah and at scattered points near the mining districts in California. Twenty years later it was adopted at separate places in Colorado and adjacent States and Territories. It is estimated that 40 per cent of the United States proper requires irrigation for successfully producing plants useful as a food supply for man and animals. In 1890 a little over three and one-half million acres were cropped by irrigation, and in the succeeding ten years this area has been doubled, largely by the more careful use of water and more complete tilling of farms already partly irrigated. Since 1895 there have been comparatively few notable works of irrigation built, and development along this line may be said to have nearly ceased. This cessation of activity in irrigation development is not because there is no longer water or fertile land, but because, as before stated, the easily available waters are already utilized, and it has not been found profitable to store floods nor to construct large works by private enterprise, any more than it would be profitable for individuals to dredge harbors or build light-houses. Moreover, it must be borne in mind, not only is it important that an ample supply of water for irrigation shall be secured and controlled, but also that it shall be stored for use when most needed and when the most remunerative crops can

be obtained. Sugar beets, potatoes, alfalfa, and orchards, all require irrigation in August and September, which is the season of least supply. These crops require, as a rule, but little water, while yielding large returns.

AREA TO BE RECLAIMED.

It is also estimated that by the construction of storage reservoirs, by diverting large rivers, and by sinking deep or artesian wells, it will be ultimately practicable to irrigate nearly ten times the area now cultivated by irrigation. There is a wide range of estimate as to the probable acreage, and it has been placed at from 60,000,000 to 100,000,000 acres, ultimately reclaimable within two or three generations.

Mr. Newlands, member of Congress, in a hearing before the House Committee on Irrigation of Public Lands, in 1901, stated that—

In this entire arid and semi-arid region there are about 600,000,000 acres of land. The most intelligent estimate is that the total amount to be reclaimed by irrigation will not exceed 75,000,000 acres. In some places the estimate is given as 100,000,000 acres, but I think 75,000,000 acres is a better estimate. It will take thirty or forty years, or perhaps fifty years, to accomplish that. So that it means simply the gradual reclamation of these lands.

If the limit of reclamation is 75,000,000 acres, this does not mean that the United States Government must reclaim all. But if the Government makes the start, thus guaranteeing continued flow of water, private enterprise will supplement this with proper local distribution.

The amount to be reclaimed, however, will depend wholly upon the treatment now accorded by the Congress to the public lands. By leaving matters as they are, only a small proportion of this extent will ever be irrigated, because of the character of the vested rights now accruing, and the West must ever remain thinly settled, with the land devoted mainly to grazing.

The Hydrographer of the United States Geological Survey states the irrigation problem as follows:

The development of the trans-Mississippi region to its full growth—agricultural and commercial—depends upon the early solution of forest and water conservation. The region is largely arid, and over one-half of its extent consists of vacant public lands. Much of this has a rich soil, but is useless on account of the lack of water. There is, on the whole, a considerable supply if the floods were conserved, but the easily available sources are limited and the development of these has already proceeded to the extent to which individuals or cooperative organizations can attain. Much has been accomplished in a relatively small way by farmers and by associations of irrigators. A few large corporations have built great works, but while the farmers have succeeded almost beyond belief, the corporations have almost invariably met financial loss. It has been proved again and again that reclamation in a small way pays the landowner, but in a large way it has not been a source of profit to the investor. The benefits derived from his efforts and enterprise have gone to the community at large rather than to himself.

Briefly summarized, therefore, it may be stated that the agricultural interests of sixteen States and Territories of the West depend directly,

n part at least, upon irrigation and irrigation methods. These States and Territories are Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington, and Wyoming. They comprise an area of nearly 1,500,000 square miles, almost one-half the area of the United States proper, and support a population of about 6,000,000 of people.

This large district, extending from the Gulf of Mexico (for a large section of Texas may be included) to the Canadian border, and practically from the Mississippi to the Pacific, constitutes what is known as the arid or semi-arid districts of the West. Into this territory railroads penetrated far in advance of population. Those who entered into the migratory movement westward during the seventies and early eighties took up a portion of this land, only to learn that the water supply thereof was insufficient to rely upon for profitable cultivation. After occupation for some time, much of it was given up entirely, public buildings were abandoned, and whole communities disappeared from the towns they had built. In other sections attempts at irrigation, more or less successful, were made, and millions of acres thereby reclaimed to civilization.

In many of these States the production of foodstuffs has not reached the point of supplying the home demand, arising largely from the development and progress of mining and other local industries. Extension of food production must come through irrigation, or not at all.

The development of this arid land depends upon the promotion of a comprehensive and judicious system for the conservation of water and its utilization by irrigation. Upon the wise solution of this problem by the Congress will depend whether the area embracing two-thirds of the western half of the United States shall ever be made habitable or shall remain a desert waste—arid, desolate, unproductive, and uninhabitable; or, as stated by the Department of Agriculture—

> On the supply of water for irrigation and its equitable distribution depend the permanent existence of civilized life in one-third of the area covered by the forty-eight States and Territories of the Union.[1]

IRRIGATION NOT CONFINED TO THE WEST.

But the benefits of irrigation are not confined to the arid regions of the West. In sections of the country East and South it has been gaining ground as a feature of agriculture in the growing of high-priced products. A regular water supply is a necessary condition in order that dry seasons may not destroy the outlay of the producer. In Connecticut, Massachusetts, and New Jersey irrigation has made the growing of small fruits highly profitable. The possibilities of its application

[1] Report No. 378, Department of Agriculture, page 210.

to market gardening are almost unlimited. In Wisconsin irrigation has been used for cranberry growing and for obtaining a setting of sod on the sandy pine lands. Tobacco growers in Connecticut are likewise using irrigation. In southern Louisiana and southern Texas the area of rice culture has been extended in some cases as much as fourfold within a year or two. Water is pumped into the canals for the purpose. Hundreds of wells are being sunk in Louisiana for the rice fields. The older methods of rice culture, such as have prevailed in the Carolinas, are giving place to the newer system, based on irrigation and the use of improved harvesting machines. Thus the widening of the irrigated area not only increases the sum total of national products, but extends the home market for manufactures.

PROPOSED NATIONAL LEGISLATION.

WHY NATIONAL AID IS ASKED.

National aid is not asked to secure the beginning of the work of irrigation nor to take up an experiment. Many millions have already been spent by private enterprise. The main object of national assistance is to make it possible for the people of the country to continue to secure homes upon the public domain through the ability to obtain water to be brought ultimately to the land by ditches or conduits built by themselves. It is asked for the same reason that the settlers called upon the Government to protect them from the Indians; that works are built to prevent overflows of great rivers, and navigation aided by establishing light-houses, and sometimes rendered possible by dredging a bar across the entrance to a harbor. As before stated, none of these pay, in the sense of a commercial undertaking, but the Government and the people, as a whole, secure a larger share of prosperity through thus making possible increased opportunities for commerce and industry.

The National Government has already begun in part the work of reclamation by setting aside the summits of the mountains, from which issue the rivers most important in irrigation, and creating these into forest reserves for the beneficial influence exercised upon the stream flow. It is necessary to go still further and, within these forest reserves, to build reservoirs, saving the floods and regulating the flow of the streams. These should never fall into private or speculative control, but should be administered for the benefit of various communities situated often in different States.

NATIONAL CONTROL PREFERABLE.

There is no doubt that any extensive plan for the reclamation of arid lands can be carried on to much better advantage by the General Government than by the States which have such lands within their borders.

Where the lands have been granted to the States they have been improvidently disposed of, and private individuals have ultimately acquired ownership of large tracts, as many as 14,000 acres in one instance. In every case where work of reclamation was a national enterprise it was a success, and only when relegated to the State has it proved a failure. The National Government, the original owner of the land and still the possessor of the greater part of it, alone has the right and the ability to conserve the waters for the best interests of the several States and communities.

In California 43 per cent of the land belongs to the United States, or is reserved and not subject to taxation; in Colorado 60 per cent, in Idaho 83 per cent, in Montana 83 per cent, in Nevada 88 per cent, in Utah 83 per cent, and in Wyoming 81 per cent. The people of the United States own from three-fourths to nine-tenths of all the land in the far West. They have, as owners, rights in the States there which the States themselves do not possess. The States sometimes have the taxing power over only small fractions of their area. The people of the United States are supreme in their control, and in all patents for lands taken up under any of the land laws of the United States after 1890 a reservation is made for a right of way thereon for ditches or canals constructed by authority of the United States.

This policy of national control has been recognized in foreign countries. From time immemorial Egypt has maintained her entire population on lands that Egypt reclaimed as a national enterprise, and by so doing, in ages past, gained the title of "The Granary of the World." In India 26,000,000 acres of land have been reclaimed by the Government as a national project.

The benefits of so large an addition to the productive area of the country are apparent. Tens of thousands of farmers, settled on small but highly productive farms, would add greatly to the agricultural products of the United States and would be good customers of its manufactures.

Having decided that the policy of Government aid may be safely begun, the laws enacted should be framed to prevent miscarriage. The money of the people should be spent for the development of future homes and not to foster or protect land monopoly, and appropriations so safeguarded as to secure this result.

Private proprietorship of water should never be recognized, because ownership thereof virtually carries with it control of the land; but the rights of each person who can put a certain amount to use should be clearly defined and guarded in the order of priority, beneficial use alone being the measure and the limit of the right.

The primary object in asking that action be taken by the Federal Government is that land monopoly may be prevented. By limiting holdings to 80 acres each as a maximum, it will be extremely difficult to create a monopoly of ownership.

The requirement of actual settlement and cultivation, coupled with payment of the cost of storing water, will also eliminate the speculative element and reserve the lands for bona fide settlers.

PROBABLE COST OF IRRIGATION.

The testimony taken by the Industrial Commission gives interesting information as to the cost of irrigation, which is shown to have been as low as from $2 to $5 per acre irrigated by the original or pioneer ditches. This matter has been thoroughly discussed by the Eleventh and Twelfth Censuses, and the average cost of bringing water to the land throughout the country is shown to have been, in round numbers, $12 an acre. The average annual cost of maintenance, repairs, or fees paid for conveying the water has been $1.25 per acre. In case of the more expensive works built by corporations, the cost of reclaiming the lands has ranged as high as $20 an acre, or even $25. Such land in first cost can not compete with that offered for sale in the Mississippi Valley. The expensive irrigated lands are in the localities where the climate is such that they can be continually cropped, the ground being immediately prepared for seeding as soon as the crop is removed; or, in the case of alfalfa, one cutting follows another throughout the year, as many as five or seven crops being had from one acre.

RIPARIAN RIGHTS.

The laws and customs governing riparian rights in the humid and semi-humid portions of the country have been modified or made of no effect in most of the States and Territories lying within the arid region. It is there recognized that water is part of a common stock necessary for life and industry, to be drawn upon by all in accordance with certain orderly procedure. Most of the arid-land States have, therefore, in their constitutions, abrogated the old doctrine of riparian rights. So that it is no longer the law in those States that a stream shall flow "undiminished in quantity and undefiled in quality" past a man's land. It can all be appropriated and diverted, and he may be left nothing but the channel. That provision of the State constitutions has been upheld by the State courts and by the Supreme Court of the United States.

The laws in the different States of the arid region differ widely, but there are certain underlying principles which are being established by court decisions, and through these many of the complications are being satisfactorily solved. The conditions which arise where a stream crosses State lines are, however, beyond the control of local legislatures and must come within the cognizance of Congress.

In Colorado, Wyoming, Utah, Idaho, and Montana the waters of streams are under public control, more or less strict, and there is also

practical uniformity in irrigation methods and similarity in the general character of the water supply, climate, and soil. This territory also includes some of the States which have by constitution and statute abrogated the common-law doctrine of riparian rights.

DIFFICULTIES AND COMPLICATIONS FEARED.

The question of national aid in irrigation has brought up certain inquiries regarding relations between the individuals who own water rights, the State which has a certain control over these, and the Nation—the great landowner and source of titles to the land and of rights to the water. The matter at first sight presents numerous complications, but underlying it are fundamental principles, which are being developed by custom and sustained by decisions of the courts.

Private enterprise has already gone nearly to its full limit. State action has been confined almost wholly to attempted improvements in legislation and the control of the distribution of the water among the irrigators. National works are being urged by those who have most thoroughly studied the subject, upon the ground that the Nation alone is in a position to conserve the water supply, since it controls the land and the sources of most of the important streams. It is not suggested that there should be any interference with vested rights, nor with the distribution of water to the irrigators by State officials, wherever such exist. Under any suggested combination of interests in reclamation, the Nation must construct the reservoirs, the large tunnels, and diversion works from great rivers, the experimental deep or artesian wells, which demonstrate the existence of underground supplies in desert areas, and other works, the magnitude of which entails cost too great for private enterprise or too far-reaching for State action. In harmony with this general development, and within its own borders, each State can supplement the national work, as far as this may be of local concern, and regulate all matters such as the adjustment of disputes among irrigators and the harmonizing of conflicting local interests.

There has been a tendency, also, to magnify the difficulties and complications and the large expenditures which ultimately may result from national reclamation works, but it is neither necessary nor desirable to attempt to foreshadow them. The magnitude of the work to be done is doubtless fully realized by the Congress. The hydographer of the United States Geological Survey suggests an expenditure of $125,000,000, spread over a period of twenty-five years. Another estimate is for $10,000,000 a year for ten years. In any event the ultimate amount needed, while not prohibitive, will be large enough to demand the utmost caution and wisdom in the provisions made for beginning and continuing work, so that the good to be returned to the people at large shall amply repay and justify even the largest amount of expense probable or necessary for the successful completion of the

great undertaking. Whatever the ultimate expenditure for reservoirs and main-line canals, the return in money and indirect benefits will be still greater. The Congress need not now consider remote expenditures and returns, but certain present concrete matters on a business basis.

So, in the matter of lack of uniformity of legislation and consequent possibility of conflict of authority, there is a problem which undoubtedly must at some time demand the serious consideration of the Congress. Particularly will this be the case when, as with the Bear River, for example, the interests of two or more States are involved. But here, also, the danger may prove to be more apparent than real. Court decisions, already alluded to, are gradually bringing uniformity within individual States, and pending cases will bring decisions that may define interstate rights and duties.

There are many projects of national importance which can be undertaken at once, without the indefinite procrastination involved in remodeling existing laws. Work may be begun, and continued for some years, where no danger of conflict can arise. In the meantime a convention of commissioners from the various States interested could meet and prepare a code of laws, sufficiently uniform to answer all practical purposes, the adoption of which by the several States would pave the way for hearty cooperation with the Government in further reclamation work.

ANSWERS TO OBJECTIONS.

There can be no possibility of conflict between the State and National authorities over water rights when once it is clearly established that beneficial use alone governs the right to water. Those now thus employing the water are doing so under the law of Congress of 1866, and their rights are and will be fully protected. The States, in some instances, have created certain machinery for adjusting disputes among these users of the water, such disputes as must always arise when men are drawing from a common stock, but the purpose of no State can be otherwise than to guard the waters and divide them justly among the various claimants.

The Nation is the great landowner and holds the water as part and parcel of the public land, allowing those persons who have put it to beneficial use to do so under set regulations, mainly of the nature of police control. It is not believed that the Nation has divested itself of the unutilized waters of the public domain. If this were the case, the lands would be deprived of value and the Government would be more helpless than an individual owning an equivalent area. It is not necessary for any State to divest itself of its police powers nor of its authority to adjust difficulties among its citizens as to water rights,

nor is it necessary for the Government to create additional machinery and a new set of officers to perform duties now undertaken, theoretically at least, by State officials.

While uniformity of practice regarding distribution of water might be desirable, yet throughout the arid region it is not an essential, since local conditions are so different. For example, methods and machinery may be used in Arizona to maintain a reservoir and divide its waters, entirely different from those used in Montana, and yet the results for the people of both States be equally satisfactory. Certain general principles being assured, there is no reason why the laws and regulations of Arizona should be identical with those of some Northern State. It may be true that under ideal conditions it would be better to sweep away existing legislation and all vested rights and begin afresh, but this conception is Utopian, and plans must fit existing conditions. Prior rights must be guarded and plans for the future made with reference to them, but no progress can be made if a beginning is postponed until everything has been arranged in the best conceivable order.

To all these doubts and difficulties and fears of trouble and complications the same reasoning may be applied. From the best knowledge obtainable it would seem to be neither feasible nor advisable to attempt in advance to bring about ideal conditions. Each project of national reclamation should be considered solely on its own merits, and each complication as it arises should be met according to those fundamental principles already referred to, thus overcoming difficulties in detail rather than trying to sweep them all away in advance. In other words, a given project being desirable and beneficial, there are certain objections and obstacles to be overcome; these can be best met and settled on their merits, thus furnishing a precedent for future action and making more easy of accomplishment the next undertaking, which doubtless will present certain difficulties of its own. If, as proposed in the legislation under consideration, the Congress adopts the proviso that right to the use of water acquired shall be perpetually appurtenant to the land, and that beneficial use shall be the basis, measure, and the limit of the right, and, further, that the distribution shall be in accordance with local laws and customs, the anticipated complications will gradually adjust themselves.

PRELIMINARY WORK ALREADY DONE.

All intelligent legislation is best promoted when based upon full knowledge, and an enterprise so vast in its ultimate magnitude should be undertaken only after thorough study of present conditions and future needs. The actual work of construction of reclamation projects should be entered upon only after a full knowledge has been

gained of the cost and benefits of each, and every individual scheme should be considered solely upon its own merits and its relation to the full ultimate development of the country.

Much valuable information already obtained is at the disposal of the Congress in the comprehensive reports made by the efficient and painstaking officials connected with the Department of Agriculture and with the United States Geological Survey. Two general lines of investigation have been pursued by the Department of Agriculture upon the subject of irrigation: (1) The study of the laws and institutions relating to irrigation in different regions, and (2) the determination of the actual use made of irrigation waters. The work committed to the Geological Survey by the Congress is of a comprehensive and technical character. In 1888 it was authorized to begin an investigation of the extent to which the arid lands could be reclaimed by irrigation. In the succeeding years it has been systematically measuring streams and surveying reservoir sites, and has now a fully equipped and experienced corps of hydraulic engineers, many of whom have had experience in the construction of large works. From 1890 to the present time it has issued each year reports prepared by, or under the direction of, its hydrographer, Mr. F. H. Newell, which describe the scientific work done by the Survey to ascertain the condition of irrigation in the United States; area irrigated; cost of works and their value and profits; the water supply; value of water of artesian wells, reservoirs, and other details; the condition of agriculture by irrigation in each State and Territory, and the physical conditions and local peculiarities in each county.

Since 1898 the Department of Agriculture has been making a comprehensive study of the laws and practices under which rights to water are acquired, and of the nature of the ownership and control recognized in the different arid States. In agricultural and engineering lines it has been measuring the amount of water used in the irrigation of different crops, the different methods of distributing water, the losses from seepage and evaporation, the value of water, and all other questions showing the conditions of agriculture under irrigation in each of the arid States. It has also taken up the subject of irrigation in humid sections of the country, especially the irrigation of rice, in an effort to show the cost and returns from irrigation, and to improve the practices of those beginning this work.

In fact, the entire range of inquiry necessary for complete scientific knowledge of the subject has been covered as far as the appropriations by the Congress have permitted. This valuable work should be continued and enlarged, to the end that action shall be based upon positive knowledge and be guided by ascertained needs, and aid applied where the best results will follow. Therefore the appropriations should be

ontinued for both the Department of Agriculture, in its special work, nd the Division of Hydrography of the Department of the Interior, or further surveys and investigations. The appropriations may be afely increased, even to an amount commensurate with the impor- ance of the work.

DEFINITE PROJECTS READY FOR ACTION.

Certain definite, well-matured projects with their costs and benefits have been fully considered. If these are proper, they should be built, and when other projects are known to be feasible they, too, should be weighed carefully and decided upon the merits of each case. The next Congress and the next generation of legislators and engineers will probably be as wise as the present, and can manage with equal ability. Out of the large number of projects examined, which undoubtedly should be built by public funds—surveys, plans, and estimates therefor having been prepared—may be mentioned the following: The San Carlos storage reservoir in Arizona, reclaiming 100,000 acres or more of public land at an estimated cost of $1,040,000; the construction of reservoirs in the Sierra Nevada in California for reclaiming desert lands in Nevada; the diversion of St. Mary River into the headwaters of Milk River in Montana.

Of one of these the Secretary of the Interior, in his latest annual report, says:

> If it should be determined that the San Carlos dam, for example, is to be built by the Government, every acre of vacant land to be supplied with water would be immediately taken in small tracts by men who would not only cultivate the ground when water is had, but in the meantime would be available as laborers in the construction of the works and would ultimately refund to the Government the cost of the undertaking.

RECOMMENDATIONS OF THE COMMISSION.

We recommend that the Congress enact laws—

1. To provide for national control of sources of water supply upon which two or more States may depend for irrigation.

2. To provide for further comprehensive surveys of the arid lands of the United States and for an immediate estimate of the water supply available for reclamation thereof; for the construction of storage reservoirs and irrigation works by which to utilize the water supply of the arid regions to the greatest possible extent; to reclaim said arid lands of the United States, reserving control of the distribution of water for irrigation to the respective States and Territories, and the holding of such lands for actual settlers under homestead entry.

3. To provide for beginning the construction of one or more large reservoirs or diversion works where the results of surveys and examination have shown that vacant public lands can be reclaimed, such land, at the conclusion of the work, being thrown open to homestead entry only, with the condition attached of actual settlement and cultivation of the ground, final title to pass only when the Government has been reimbursed, by small annual payments, if necessary, for an amount equivalent to the cost per acre of conserving the water.

ALBERT CLARKE, *Chairman.*
BOIES PENROSE.
THOMAS R. BARD.
J. J. GARDNER.
JNO. C. BELL.
THEO. OTJEN.
WM. LORIMER.
JOHN M. FARQUHAR.
THOS. W. PHILLIPS.
J. L. KENNEDY.
CHAS. H. LITCHMAN.
D. A. TOMPKINS.

APPENDIX I.

VOLUME OF PRODUCTION.

CHART 1.—*Relative changes in volume of production of gold, silver, pig iron, and copper, 1870–1900, average production for 1879–1888 being 100.*

[See Comments, pp. 13–18.]

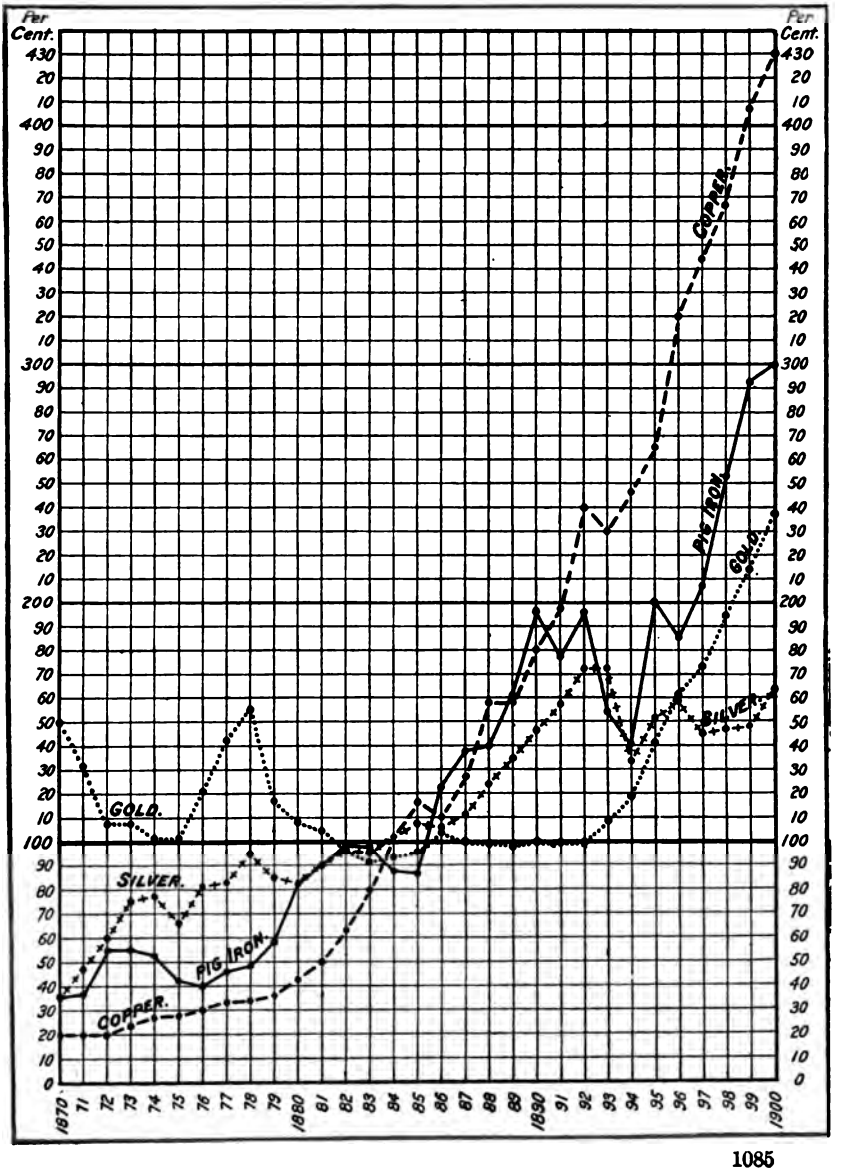


CHART 2.—*Relative changes in volume of production of petroleum, anthracite coal, and bituminous coal, 1870–1900, average production for 1879–1888 being 100.*

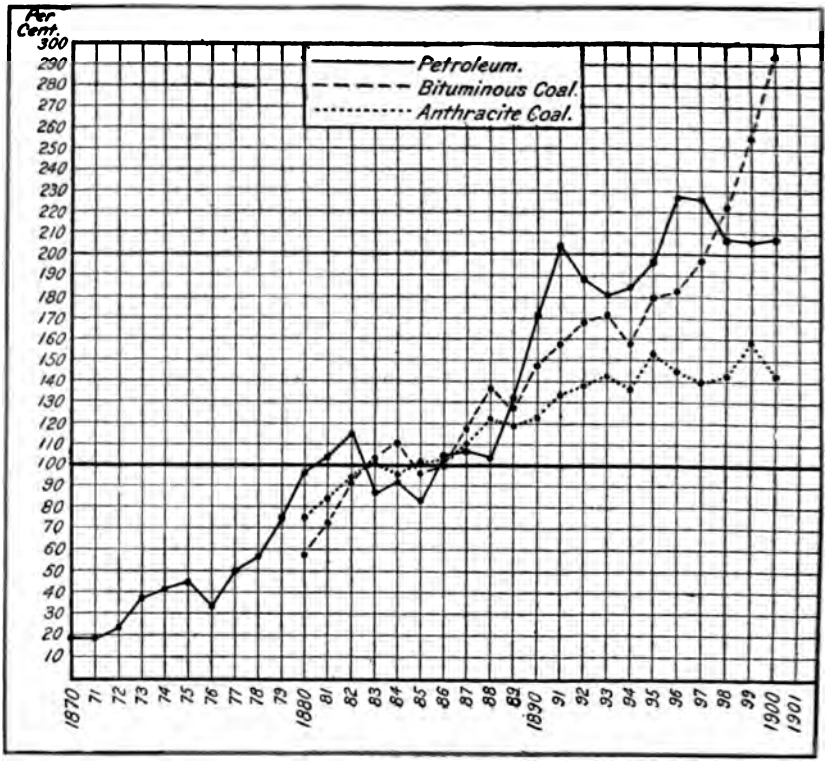


CHART 3.—*Relative changes in volume of production of petroleum, anthracite coal, and bituminous coal, 1870–1900, average production for 1879–1888 being 100.*

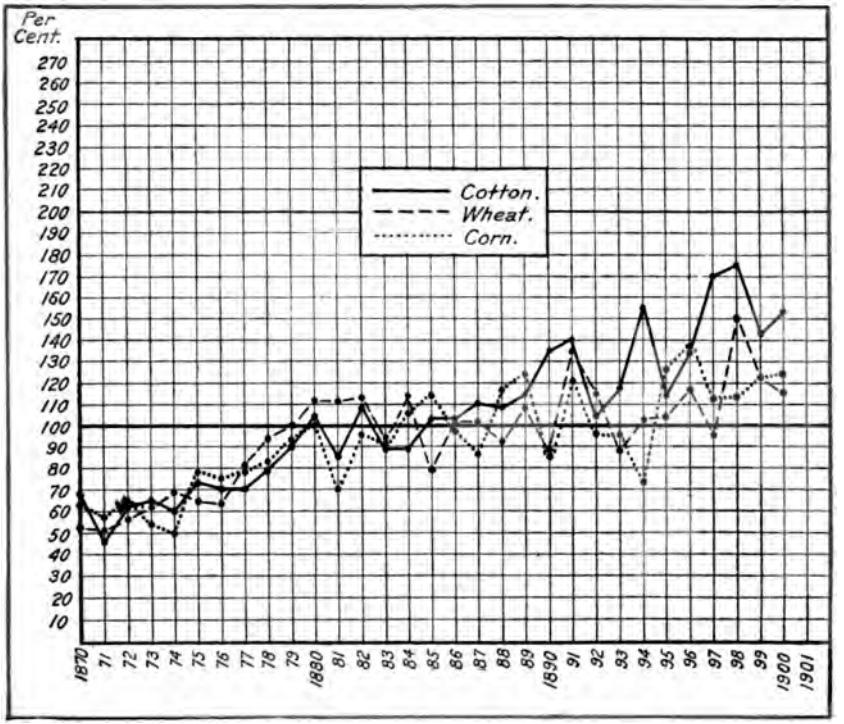


CHART 4.—*Relative numbers of sheep and swine and annual wool clip, 1870–1900, average for 1879–1888 being 100.*

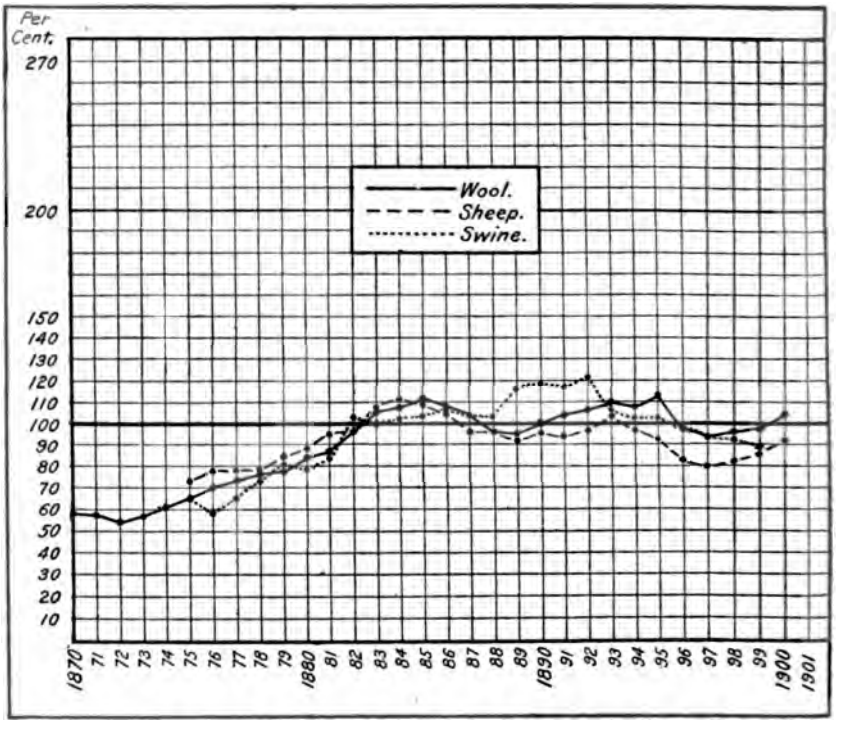


CHART 5.—*Relative numbers of horses, milch cows, and cattle, 1874–1900, average numbers for 1880–1889 being 100.*

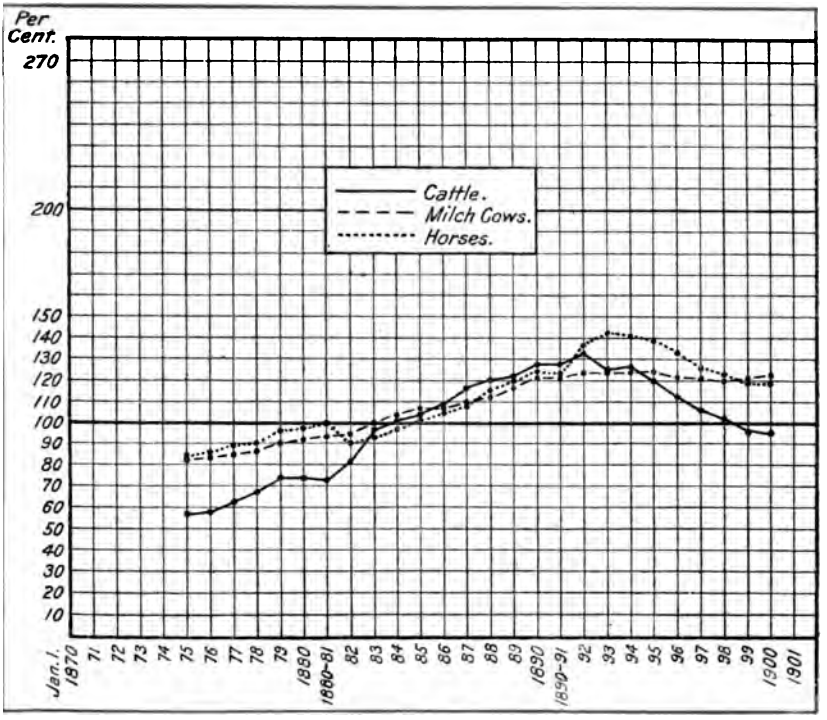


CHART 6.—*Relative production of iron products, 1870–1899, average production for 1879–1888 being 100.*

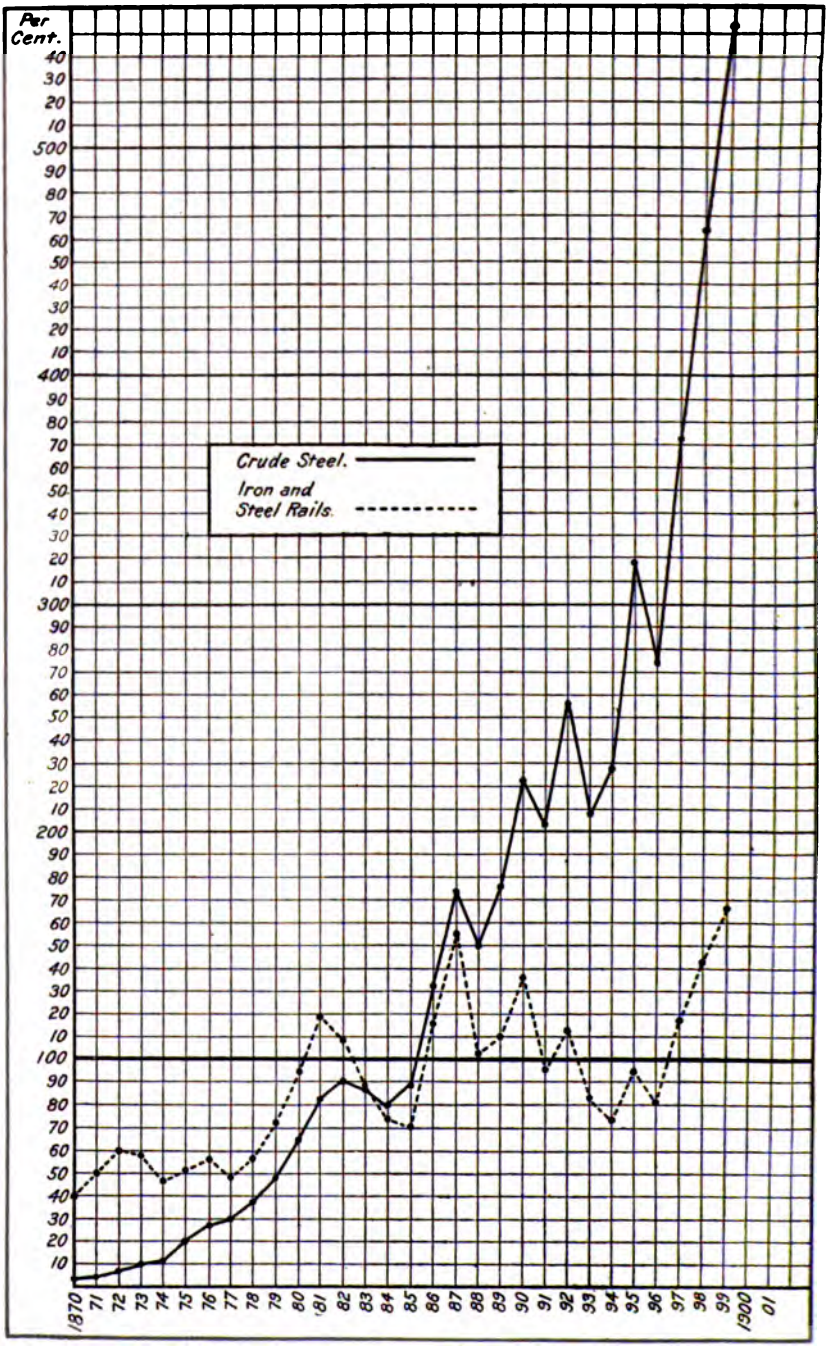


CHART 7.—*Takings of cotton and woolen mills, 1870–1901.*

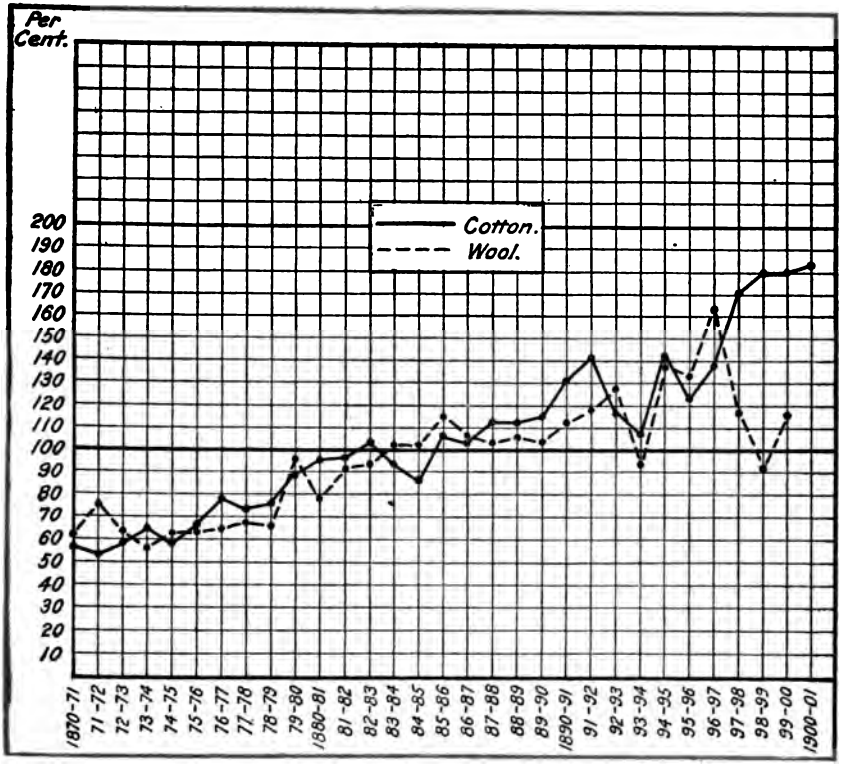


CHART 8.—*Cotton consumption of mills in the United States.*

[From data in Commercial and Financial Chronicle, September 7, 1901.]

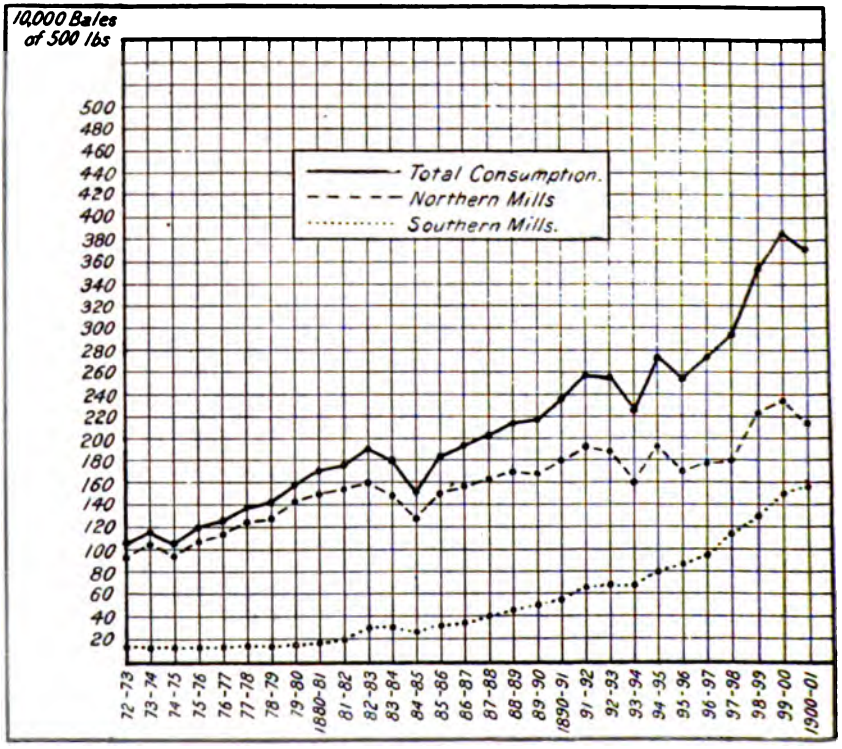


CHART 9.—*Relative changes in production of distilled liquors, fermented liquors, and cigars, average production for 1879–1888 being 100.*

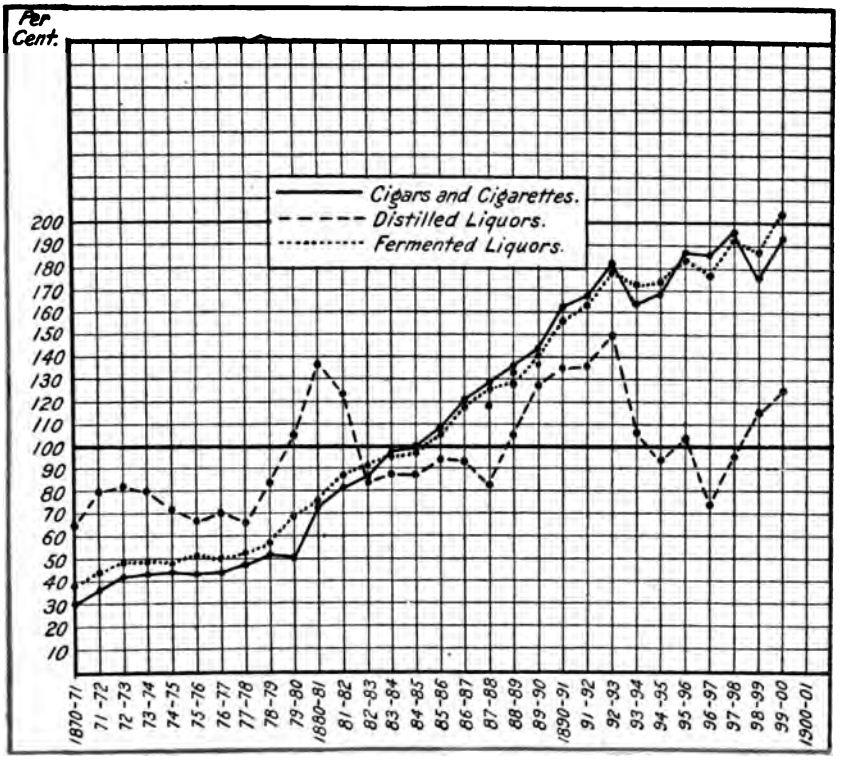
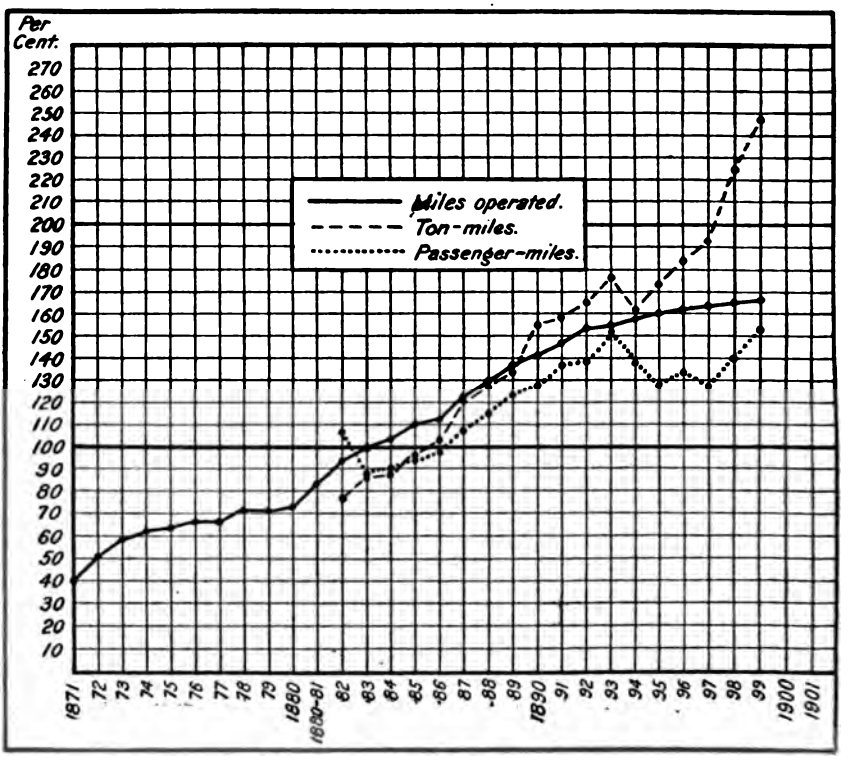


CHART 10.—*Relative increase and decrease of miles of railroad operated, and passenger and ton-mileage, average for 1879–1888 being 100.*



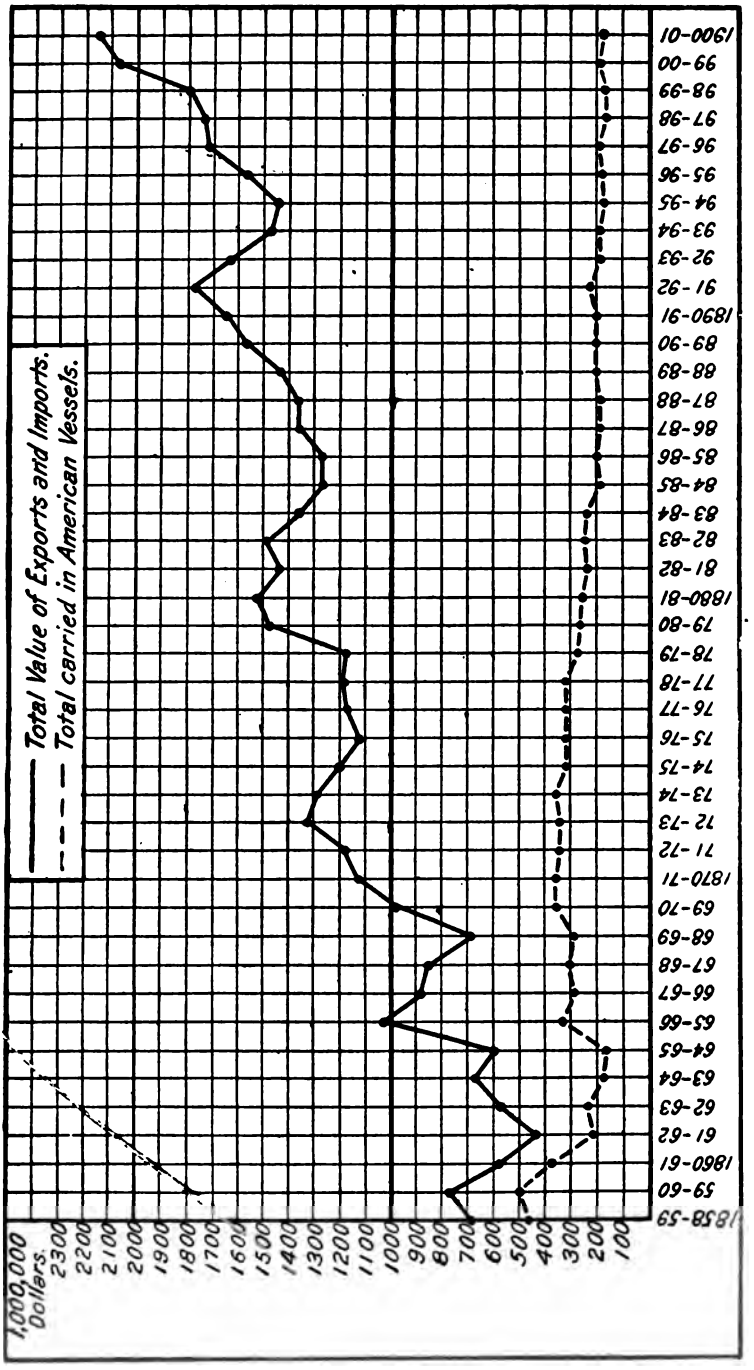


CHART 11.—*Foreign carrying trade, 1858-1901.*

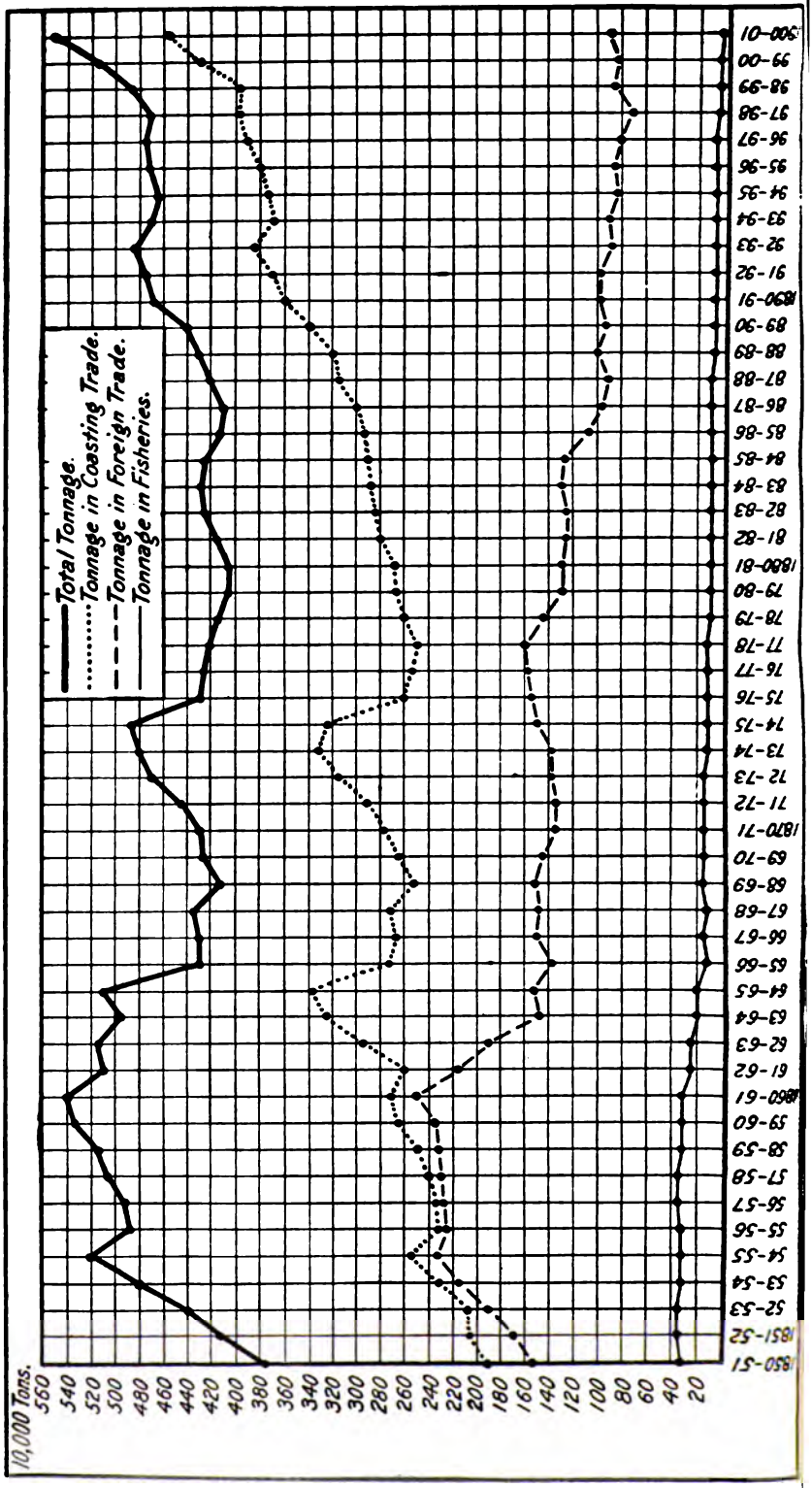
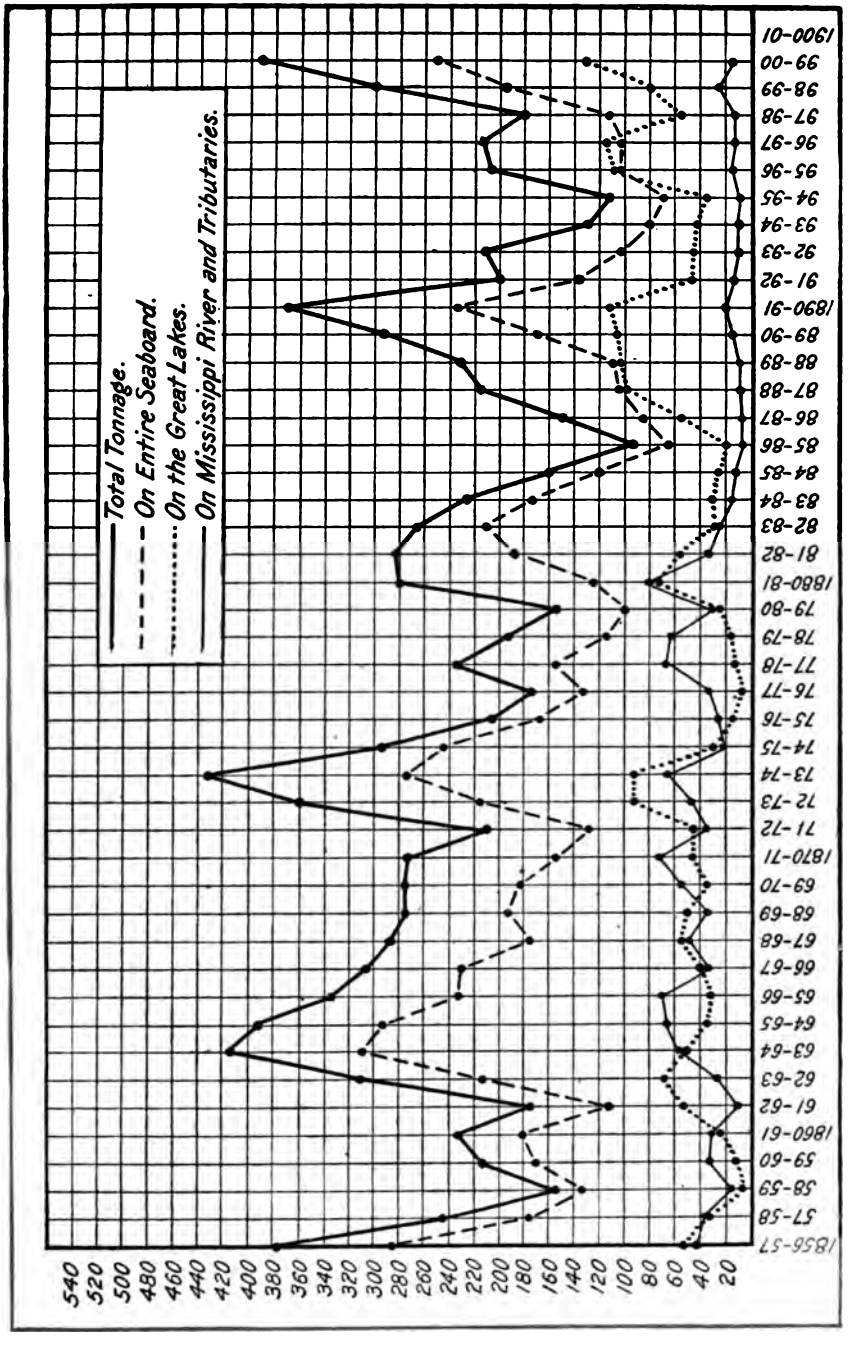


CHART 12.—*Distribution of tonnage, United States merchant marine, 1851–1901.*


Total Tonnage.
On Entire Seaboard.
On the Great Lakes.
On Mississippi River and Tributaries.
540
520
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
1856-57
57-58
58-59
59-60
1860-61
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99-00
1900-01

APPENDIX II.

GOLD ABSORPTION DURING CURRENCY CHANGES.

The following table has been compiled from the reports of the Director of the Mint with a view to showing in detail the movement of gold referred to in text (pp. 19–21). In the first column is given the world's product of gold for each calendar year from 1887 to 1889. In the second column is given the net absorption of gold by the four great continental countries, Russia, Austria-Hungary, Germany, and France. In the third column is given the surplus for other countries. Detailed tables are also given for each of the four countries mentioned.

By net absorption is meant the balance obtained by adding imports to or deducting exports from the domestic production of the metal. Taking, for example, Russia, in the year 1892, it can be seen from the table that the net imports of gold were $89,301,098, and the production $24,806,200, making a total absorption of $114,107,296. The absorption for the preceding year exceeded $86,800,000, whereas for the four years still preceding, owing to large exports of domestic products, Russian absorption ranged from only $7,203,712 to $22,598,215. Likewise Austria-Hungary, prior to 1890, drew upon the world's supply not more than $7,950,000 in one year, whereas from 1890 to 1893 the absorption ranged from $14,476,682 to $64,317,291. Germany, too, increased the absorption of gold during the period 1890 to 1894, ranging from $6,714,453 to $63,511,043, whereas in the three years preceding it had been only $3,697,258 to $10,695,176. France actually lost large amounts of gold in the years 1887, 1888, and 1890, but in 1890 to 1894 absorbed $24,165,518 to $67,771,353 per year.

Combining the gold movement in these four countries, it appears that this net absorption of gold in the four years from 1887 to 1890 ranged from $64,612,564 down to an actual net loss of $10,848,965, whereas in the following four years, 1891 to 1894, their net absorption ranged from $150,401,797 to $216,258,177.

The third column shows the results of this changed policy upon the distribution of the world's annual product of gold. This column shows that in the four years 1887 to 1890 the surplus of the world's product left for other countries ranged from $58,876,636 to $116,623,865, whereas in the years 1891, 1892, and 1894 these four countries actually absorbed more than the world's product by $19,751,797 to $56,805,055 per year.

Beginning in 1895, the accumulation of gold by these countries was less rapid, and in that year the surplus for other countries amounted to $124,989,292. In 1896 and 1897 Russia and Austria-Hungary both resumed their absorption, although the great increase in production still left $81,000,000 to $93,000,000 for other countries. In 1897 this transition to the gold standard was completed, and in 1898 the surplus of gold left for other countries, augmented as it was by an enormous increase of the world's output, was $218,585,540, and in 1899 it was $227,735,572.

The table also shows the effect of the gold movements in continental Europe upon the movement of gold in the United States. Taking the domestic production of gold combined with the net exports or imports, it appears that in the three years 1888 to 1890 (fiscal years ending June 30, not calendar years, as in other countries), there was a loss in 1889 of $16,861,101 and gains in the other two years of $58,733,083 and $28,591,953. But in the six years 1891 to 1896 there were, notwithstanding the large production, three years of loss, aggregating $111,521,655, and three years of gain, aggregating $84,677,305. On the other hand, after 1897, when the European demand, for the purpose of effecting currency changes, had fallen off, the net absorption mounted to the highest known figures, namely, $101,972,841 in 1897, $169,321,476 in 1898, and $122,482,099 in 1899.

INTERNATIONAL GOLD MOVEMENT, 1887 TO 1899 (CALENDAR YEARS).

Year.	World's product.	Net absorption of world's product by Russia, Austria-Hungary, France, and Germany.	Surplus of world's product for other countries.
1887	$105,774,900	[1] $10,848,965	$116,623,865
1888	110,196,900	9,432,841	100,764,059
1889	123,489,200	64,612,564	58,876,636
1890	118,848,700	31,388,116	87,460,584
1891	130,650,000	150,401,797	[2] 19,751,797
1892	146,651,500	203,456,555	[2] 56,805,055
1893	157,494,800	151,345,595	6,149,205
1894	181,175,600	216,258,177	[2] 35,082,577
1895	198,763,600	73,774,308	124,989,292
1896	202,251,600	109,073,493	93,178,107
1897	236,073,700	157,747,351	81,064,649
1898	286,586,500	67,990,960	518,585,540
1899	306,584,900	78,849,328	227,735,572

[1] Net loss. [2] Absorption from other countries in addition to absorption of world's product.

RUSSIA.

Year.	Excess imports.	Excess exports.	Production.	Net absorption.
1887	.....	$12,888,288	$20,092,000	$7,203,712
1888	.....	10,800,569	21,302,000	10,501,431
1889	.....	11,394,084	23,905,600	12,511,516
1890	.....	859,785	23,458,000	22,598,215
1891	[1] $62,639,208	.....	24,162,500	86,801,208
1892	89,301,098	.....	24,806,200	114,107,298
1893	10,090,972	.....	27,808,200	37,899,172
1894	55,441,887	.....	24,133,400	79,575,287
1895	19,301,163	.....	28,894,400	48,195,563
1896	69,539,963	.....	21,535,800	91,075,763
1897	68,787,297	.....	23,245,700	92,032,997
1898	51,969,867	.....	25,463,400	77,433,267
1899	.....	2,239,622	22,167,100	19,927,478

AUSTRIA-HUNGARY.

1887	$1,832,302	.....	$1,247,450	$3,079,752
1888	6,026,592	.....	1,247,450	7,274,042
1889	6,489,819	.....	1,461,000	7,950,819
1890	17,239,060	.....	1,398,500	18,637,560
1891	13,077,082	.....	1,399,600	14,476,682
1892	28,954,176	.....	1,503,300	30,457,476
1893	62,641,891	.....	1,675,400	64,317,291
1894	3,340,194	.....	2,060,300	5,400,494
1895	16,028,101	.....	1,989,000	18,017,101
1896	11,039,135	.....	2,152,700	13,191,835
1897	22,225,732	.....	2,235,600	24,461,332
1898	.....	$14,320,916	1,859,500	12,461,416
1899	.....	5,659,498	1,943,900	3,715,598

GERMANY.

1887	$9,199,176	.....	$1,496,000	$10,695,176
1888	8,075,102	.....	1,203,000	9,278,102
1889	3,697,258	.....	.....	3,697,258
1890	15,654,259	.....	.....	15,654,259
1891	24,958,389	.....	.....	24,958,389
1892	6,714,453	.....	.....	6,714,453
1893	11,376,228	.....	1,531,900	12,609,128
1894	61,440,743	.....	2,060,300	63,511,043
1895	3,618,719	.....	2,223,100	5,841,819
1896	5,421,429	.....	1,139,100	6,560,529
1897	8,583,217	.....	1,373,100	9,956,317
1898	24,856,594	.....	73,600	24,930,194
1899	32,255,997	.....	74,200	32,181,797

[1] Includes imports in Roumania, $7,296,517, in consequence of the adoption of gold standard and demonetization of silver.

INTERNATIONAL GOLD MOVEMENT, 1887 TO 1899 (CALENDAR YEARS)—Continued.

FRANCE.

Year.	Excess imports.	Excess exports.	Production.	Net absorption
1887		$31,827,605		$31,827,6
1888		17,620,734		17,620,7
1889	$40,186,973		$266,000	40,452,9
1890		25,624,918	128,000	25,501,9
1891	24,032,518		133,000	24,165,5
1892	53,541,028		139,600	53,680,6
1893	36,334,704		185,300	36,520,0
1894	67,771,353		8,000	67,771,3
1895	1,706,825			1,714,8
1896		1,754,634		1,754,6
1897	31,296,705			31,296,7
1898		21,911,085		21,911,0
1899	30,455,651			30,455,6

UNITED STATES.

[Director of the Mint, 1900, pp. 247, 208.]

Year ending June 30—	Excess imports.	Excess exports.	Domestic production.	Net gain.	Net loss.
1888	$25,558,083		$83,175,000	$58,733,083	
1889		$49,661,101	32,800,000		$16,861,1
1890		4,253,047	32,845,000	28,591,953	
1891		67,746,768	33,175,000		34,771,7
1892		142,654	33,000,000	32,857,346	
1893		86,897,275	35,955,000		50,942,2
1894		4,172,665	39,500,000	35,327,335	
1895		30,117,376	46,610,000	16,492,624	
1896		78,904,612	53,088,000		25,816,6
1897	44,609,841		57,363,000	101,972,841	
1898	104,868,476		64,463,000	169,321,476	
1899	51,429,099		71,053,000	122,482,099	

APPENDIX III.

PRICES.

[See comments, pp. 28–34.]

E 1.—INDEX NUMBERS (OR PERCENTAGES) OF RAILROAD STOCKS, AVERAGE PRICES OF 1879–1889 BEING 100.

[Compiled by John R. Commons and N. I. Stone.]

ar ending une 30—	Adams Exp.	Am. Exp.	Canada South.	Cent. R. R. N. J.	C., B., Q.	C., M. & St. P., com.	C., M. & St. P., pf.	C.N.W., com.	C.N.W., pf.	C., R. I.
).....	79	52	100	51	86	46	67	44	57	97
).....	80	58	118	96	97	81	87	76	76	125
.....	92	73	132	118	119	117	108	108	97	102
.....	104	100	106	124	109	127	107	114	103	108
).....	100	100	119	102	98	122	108	121	113	102
.....	98	101	97	113	95	106	101	107	105	96
).....	98	100	56	61	92	83	93	83	94	89
).....	106	110	72	65	102	97	101	94	99	99
.....	105	119	104	87	107	104	106	104	105	102
).....	106	118	97	106	99	86	100	98	105	93
).....	108	122	97	127	82	75	93	97	104	81
).....	112	126	100	166	82	80	100	99	104	77
.....	109	125	95	159	71	69	98	96	101	62
.....	109	127	106	168	77	84	105	103	103	66
).....	118	129	103	174	75	89	108	101	106	65
.....	109	121	90	150	61	69	101	92	102	54
).....	108	121	92	135	56	67	104	88	104	51
).....	111	123	96	146	63	84	111	92	108	59
.....	110	121	84	130	55	83	113	91	110	51
).....	103	131	96	128	73	93	124	109	122	71
).....	81	150	100	138	96	131	142	126	134	87
00	87	160	97	164	100	141	151	146	147	91
01	109	187	104	201	114	157	158	155	156	100

ar ending une 30—	C., M., St. P. O.	D., L., W.	Erie.	Ill. C.	L. S.	L. & N.	M. C.	N. Y. C.	N. Y., N. H., H.	Nor. Pac.
).....	.....	44	62	66	68	.....	87	97	82	.....
).....	117	64	120	78	99	147	102	108	82	94
.....	111	88	144	98	121	171	125	121	90	115
.....	96	105	131	107	119	140	105	116	91	131
).....	120	111	122	113	113	90	112	110	92	157
.....	88	102	87	104	102	72	101	98	93	100
).....	65	88	42	97	68	44	69	79	93	60
).....	89	98	70	108	80	64	80	86	105	83
.....	122	115	106	106	96	88	103	96	112	93
).....	101	110	88	95	96	90	98	92	112	80
).....	88	117	89	92	103	93	102	92	130	86
).....	82	120	87	93	108	125	110	92	130	104
.....	67	118	70	82	111	121	108	88	130	93
.....	96	124	89	81	125	115	120	95	119	78
).....	124	128	76	80	135	109	122	94	122	58
.....	89	133	47	75	145	77	111	86	96	21
).....	84	137	38	72	139	80	112	84	99	14
).....	101	138	42	79	152	84	117	85	96	13
.....	115	130	44	74	157	71	108	81	89	40
).....	184	131	47	82	183	84	122	94	94	70
).....	216	132	44	90	200	92	129	107	104	142
00	289	163	41	91	210	124	127	117	112	180
01	310	164	73	101	225	132	124	127	110	262

TABLE 1.—INDEX NUMBERS (OR PERCENTAGES) OF RAILROAD STOCKS, AVERAGE PRICE OF 1879–1889 BEING 100—Continued.

Year ending June 30—	Penn.	Pullman.	Reading.	Union Pacific.	U. S. Exp.	Wabash.	Wells Fargo.	W. U. Tel.	Simple average.
1878–79	.....	.....	.....	88	76	.....	80	115	[illegible]
1879–80	90	81	182	111	75	137	85	122	[illegible]
1880–81	108	96	97	126	87	195	94	129	114
1881–82	109	100	135	155	118	180	107	108	116
1882–83	109	96	121	135	106	133	104	107	112
1883–84	108	90	109	108	94	72	94	91	[illegible]
1884–85	98	84	44	62	83	28	89	73	[illegible]
1885–86	94	98	44	67	96	41	98	85	[illegible]
1886–87	100	109	74	77	101	81	106	89	[illegible]
1887–88	97	109	128	71	113	68	107	98	[illegible]
1888–89	.....	135	109	81	127	64	114	102	[illegible]
1889–90	.....	142	92	84	138	72	115	103	[illegible]
1890–91	.....	151	77	67	105	50	115	99	[illegible]
1891–92	99	141	98	56	84	67	117	104	[illegible]
1892–93	94	146	97	49	95	57	119	114	[illegible]
1893–94	88	125	40	26	80	37	105	102	[illegible]
1894–95	90	120	34	15	72	36	89	107	[illegible]
1895–96	95	125	30	13	69	48	84	108	[illegible]
1896–97	91	116	44	9	61	36	79	100	[illegible]
1897–98	126	133	47	28	66	44	98	108	[illegible]
1898–99	219	127	43	49	76	52	102	113	[illegible]
1899–1900	237	137	43	64	79	58	105	105	[illegible]
1900–1901	249	153	57	102	93	64	112	104	[illegible]

TABLE 2.—AVERAGE PRICES OF TRANSPORTATION STOCKS PER SHARE.

Year ending June 30—	Adams Exp.	Am. Exp.	Canada South.	Cent. R. R. N. J.	C., B., Q.	C., M. & St. P.	C., M. & St. P., pf.	C. N. W.	C. N. W., pf.	C. R. I.
1879–89	$134	$92	$55	$72	$130	$88	$114	$112	$136	[illegible]
1878–79	105	48	54	87	111	40	77	50	78	[illegible]
1879–80	107	54	65	69	126	72	100	86	104	[illegible]
1880–81	123	67	72	86	154	104	118	116	131	[illegible]
1881–82	140	92	58	90	142	112	123	128	140	[illegible]
1882–83	134	92	65	74	127	108	124	136	153	[illegible]
1883–84	131	93	53	82	123	94	116	120	143	[illegible]
1884–85	131	92	81	44	119	74	106	93	128	[illegible]
1885–86	142	102	39	47	133	86	116	106	136	[illegible]
1886–87	141	109	57	63	139	92	121	117	143	[illegible]
1887–88	142	109	53	77	129	76	115	110	142	[illegible]
1888–89	147	112	53	92	107	67	106	109	141	[illegible]
1889–90	150	116	55	120	106	71	115	111	142	[illegible]
1890–91	146	115	52	115	92	61	112	108	137	[illegible]
1891–92	146	117	58	122	100	74	120	115	140	[illegible]
1892–93	157	118	56	126	98	78	123	113	143	[illegible]
1893–94	146	111	49	109	79	61	116	103	139	[illegible]
1894–95	145	111	50	98	73	60	119	98	142	[illegible]
1895–96	149	113	52	106	83	74	127	104	147	[illegible]
1896–97	147	110	46	94	72	73	129	102	150	[illegible]
1897–98	138	112	52	93	96	83	142	122	167	[illegible]
1898–99	109	138	55	100	125	116	162	141	183	[illegible]
1899–1900	116	147	53	119	130	125	173	164	200	[illegible]
1900–1901	146	172	57	145	148	138	181	174	209	[illegible]

TABLE 2.—AVERAGE PRICES OF TRANSPORTATION STOCKS PER SHARE—Continued.

Year ending June 30—	C., M., St.P.O.	D., L., W.	Erie.	Ill. Cent.	L. S.	L. & N.	Mich. Cen.	N. Y. C.	N.Y.N.H.
78–89	40	118	31	125	98	65	85	117	193
78–79	.....	51	20	82	67	.....	74	113	158
79–80	47	76	38	98	97	96	88	126	159
80–81	45	104	45	123	119	112	108	141	178
81–82	39	124	41	134	117	92	90	136	176
82–83	49	130	38	142	111	59	96	129	177
83–84	36	120	27	130	100	42	87	115	179
84–85	26	104	13	122	67	29	69	93	180
85–86	36	116	22	136	79	42	68	101	202
86–87	49	136	33	133	93	58	88	112	216
87–88	41	129	28	119	93	59	83	107	216
88–89	36	139	28	115	101	61	87	108	250
89–90	33	142	27	116	106	82	94	107	250
90–91	27	139	22	102	109	79	92	103	250
91–92	39	146	28	102	123	76	103	111	229
92–93	50	151	24	100	132	71	104	109	236
93–94	36	157	15	93	142	51	95	100	186
94–95	34	162	12	90	136	52	96	98	191
95–96	41	163	13	99	149	55	100	99	185
96–97	47	153	14	93	154	47	92	95	171
97–98	74	155	15	103	179	55	104	110	183
98–99	87	156	14	112	195	60	110	125	200
99–1900	117	181	13	114	206	81	109	136	215
00–1901	125	193	23	127	220	86	106	141	212

Year ending June 30—	Nor. Pac.	Penn.	Pull-man.	Read-ing.	Union Pacific.	U.S.Exp.	Wabash.	W. F. Co.	W.U. Tel.
78–89	31	57	132	46	77	62	41	121	82
78–79	.....	.....	.....	.....	68	47	.....	96	94
79–80	29	51	106	61	85	47	57	108	100
80–81	35	61	127	45	105	54	80	114	106
81–82	40	62	132	63	119	73	74	129	89
82–83	48	61	126	56	104	66	55	126	88
83–84	30	58	119	51	79	59	30	114	75
84–85	18	52	111	20	48	51	11	107	60
85–86	25	53	129	21	51	59	17	118	69
86–87	29	57	144	36	60	63	33	129	73
87–88	24	55	143	59	54	70	28	129	76
88–89	26	.....	178	51	62	79	26	138	84
89–90	32	.....	187	43	65	86	30	139	84
90–91	28	.....	199	36	51	65	20	139	81
91–92	24	56	186	43	43	52	27	141	85
92–93	18	53	192	45	38	59	23	144	98
93–94	6	50	164	18	20	50	15	127	84
94–95	4	51	159	16	11	45	15	108	87
95–96	41	54	164	14	10	43	20	101	88
96–97	12	52	153	20	7	38	15	96	82
97–98	21	71	175	22	22	41	18	112	89
98–99	43	124	167	20	38	47	22	123	93
99–1900	55	134	180	20	49	49	22	127	86
00–1901	80	141	196	26	78	58	26	135	85

CHART 1.—*Wholesale prices, 1878–1901, average prices for 1879–1889 being 100.*

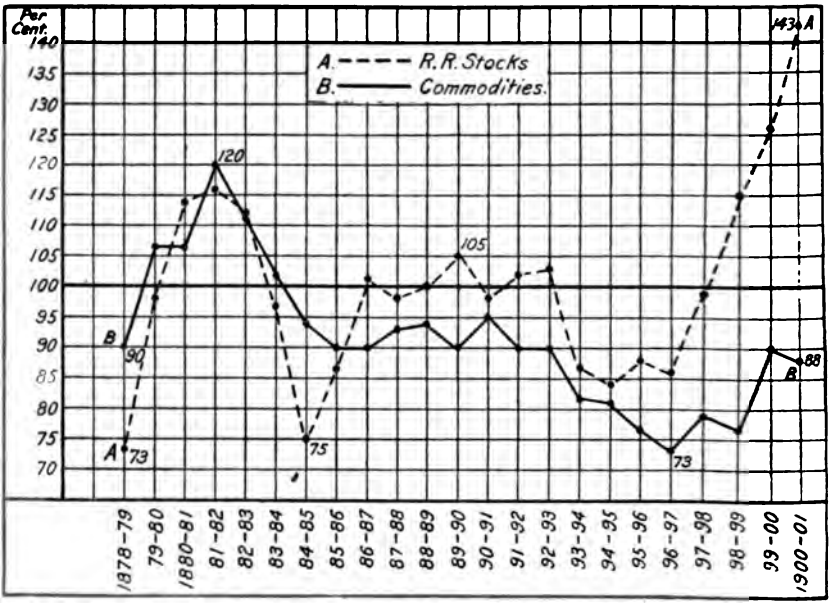

TABLE 3.—INDEX NUMBERS (OR PERCENTAGES) OF PRICES, AVERAGE PRICES OF 1879–1889 BEING 100.

GROUP I.—*Live stock.*

Subgroup 1.—Live stock, a group in which the supply does not quickly respond to increased demand, and which, therefore, shows excessive rise in times of prosperity. Includes cattle, sheep, and hogs.

GROUP II.—*Animal products.*

A group produced from Group I, but showing less extreme fluctuations, and subdivided into:

Subgroup 2.—Slaughter products: Beef, tallow, pork, lard, hides, glue.

Subgroup 3.—Dairy products: Butter, cheese, milk, eggs.

GROUP III.—*Agricultural products.*

A group of unlimited supply—i. e., a group which can be reproduced in a single season. Subdivided into:

Subgroup 4.—Breadstuffs: Corn, wheat, oats, rye, barley, rice.

Subgroup 5.—Plants and fibers: Potatoes, beans, sugar (raw), hay, flaxseed, wool, cotton.

GROUP IV.—*Metals, Minerals, and Lumber.*

A group of limited supply—i. e., a group which is not reproduced but is found under or on the earth's surface. Subdivided into:

Subgroup 6.—Metals: Pig iron, silver, gold, copper, lead, zinc, quicksilver, tin.

Subgroup 7.—Minerals and lumber: Coal (anthracite), spruce, yellow pine, petroleum, phosphate rock.

GROUP V.—*Manufactured products.*

A group of articles produced mainly from Groups III and IV, subdivided:

Subgroup 8.—Iron manufactures: Bar iron, steel rails, barbed wire, steel billets, tin plate.

Subgroup 9.—Mineral manufactures: Coke, brick, lime, cement, petroleum (refined), rosin, turpentine, white lead, glass, sulphuric acid, muriatic acid, alum, bicarbonate of soda.

Both subgroups 8 and 9 are manufactured mainly from crude materials of limited supply.

Subgroup 10.—Manufactured agricultural products—i. e., articles manufactured from crude materials of unlimited supply: Print cloth, leather, cotton-seed oil, linseed oil, cotton-seed meal, sugar (granulated), whisky, flour, coffee.

TABLE 3.—INDEX NUMBERS (OR PERCENTAGES) OF PRICES, AVERAGE PRICES OF 1879–1889 BEING 100—Continued.

GROUP I.—LIVE STOCK.

Year ending June 30—	Subgroup 1.—Live stock.			
	Cattle.	Hogs.	Sheep.	Average.
1878–79	83	67	84	78
1879–80	84	77	98	83
1880–81	97	100	102	105
1881–82	117	128	109	122
1882–83	103	138	106	121
1883–84	99	105	103	102
1884–85	111	90	88	96
1885–86	104	77	97	92
1886–87	93	89	96	92
1887–88	95	97	104	97
1888–89	96	98	94	97
1889–90	89	67	109	88
1890–91	99	77	107	94
1891–92	101	86	111	96
1892–93	103	121	110	111
1893–94	95	99	86	93
1894–95	105	90	82	92
1895–96	90	72	78	80
1896–97	93	63	80	78
1897–98	96	70	89	85
1898–99	101	67	94	87
1899–1900	112	82	103	99
1900–1901	103	94	93	96

GROUP II.—ANIMAL PRODUCTS.

Year ending June 30—	Subgroup 2.—Slaughter products.							Subgroup 3.—Dairy products.					
	Beef.	Tallow.	Pork.	Lard.	Hides.	Glue.	Average.	Butter.	Cheese.	Milk.	Eggs.	Average.	Average.
1878–79	90	106	62	77	89	71	81	77	70	81	88	78	79
1879–80	85	100	75	81	110	97	87	98	101	86	78	98	93
1880–81	102	99	106	109	113	98	105	111	109	101	110	107	106
1881–82	115	128	126	139	110	109	120	128	107	109	109	116	118
1882–83	106	134	136	143	107	106	118	111	108	109	117	111	115
1883–84	128	120	104	105	101	106	120	101	108	112	119	108	115
1884–85	110	104	96	82	96	102	103	90	93	98	109	96	101
1885–86	93	81	67	74	98	100	90	84	79	96	81	88	89
1886–87	106	70	96	80	96	100	101	90	104	95	95	94	98
1887–88	84	75	101	89	86	97	90	93	99	98	94	96	92
1888–89	70	87	93	97	83	84	84	92	92	94	86	92	88
1889–90	70	73	76	74	80	83	74	75	87	91	87	84	73
1890–91	77	80	77	75	87	83	79	88	83	89	103	90	85
1891–92	74	79	71	78	79	85	76	88	93	93	98	92	86
1892–93	85	91	111	116	74	88	93	97	94	94	107	99	96
1893–94	85	83	99	97	51	80	86	88	95	88	90	89	87
1894–95	95	79	86	86	71	74	88	75	86	88	95	84	86
1895–96	79	64	63	67	84	69	77	70	78	87	81	79	78
1896–97	92	53	52	47	80	74	88	61	87	82	80	74	80
1897–98	120	59	65	59	102	74	111	67	72	81	77	74	94
1898–99	99	60	61	64	104	78	93	72	83	82	89	79	86
1899–1900	113	74	77	71	115	90	105	85	103	95	87	91	97
1900–1901	97	75	82	90	98	91	94	91	96	94	95	93	96

CHART 2.—*Wholesale prices, 1878–1901, average prices for 1879–1889 being 100.*

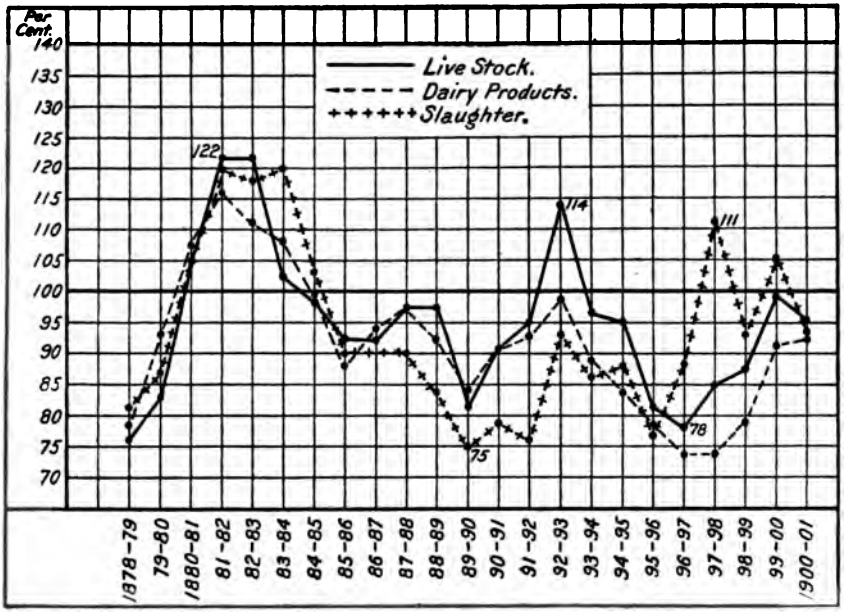

TABLE 3.—INDEX NUMBERS (OR PERCENTAGES) OF PRICES, AVERAGE PRICES OF 1879–1889 BEING 100—Continued.

GROUP III.—AGRICULTURAL PRODUCTS.

Year ending June 30—	Subgroup 4.—Breadstuffs.							Subgroup 5.—Plants and fibers.								Average.
	Corn.	Wheat.	Oats.	Rye.	Barley.	Rice.	Average.	Potatoes.	Beans.	Sugar, raw.	Hay.	Flaxseed.	Wool.	Cotton.	Average.	
1878–79	78	92	67	69	114	109	85	188	68	112	65	99	92	98	92	88
1879–80	80	117	95	104	100	122	106	70	68	117	101	109	121	112	110	108
1880–81	86	106	101	137	121	118	104	95	84	122	118	91	118	106	110	107
1881–82	137	138	141	142	138	111	135	144	153	122	115	102	113	111	114	127
1882–83	133	111	129	96	111	102	119	120	129	115	98	99	111	102	104	113
1883–84	113	99	98	89	93	103	101	63	128	102	93	114	103	100	99	100
1884–85	100	84	92	91	83	101	90	79	93	82	96	105	90	100	98	93
1885–86	86	87	90	91	79	97	87	93	72	86	97	87	88	88	90	88
1886–87	81	82	83	82	82	81	82	104	82	76	81	81	88	91	88	85
1887–88	101	80	92	85	103	78	89	120	100	82	112	97	84	94	97	93
1888–89	83	99	80	82	94	88	91	110	89	95	89	111	84	96	93	92
1889–90	72	86	70	68	76	90	79	116	106	88	77	105	88	104	96	87
1890–91	116	104	140	107	101	93	109	152	121	73	87	97	86	91	92	101
1891–92	115	95	97	126	89	86	100	86	97	49	98	75	80	72	80	90
1892–93	94	79	98	85	94	69	88	121	104	52	92	85	77	78	83	86
1893–94	81	64	95	71	79	65	78	120	108	48	83	92	60	72	77	78
1894–95	104	61	94	78	78	84	83	112	110	48	83	109	48	59	69	76
1895–96	67	66	61	60	54	72	64	66	69	54	100	73	49	75	77	70
1896–97	51	76	55	52	48	77	65	71	52	48	66	58	49	71	66	65
1897–98	63	107	73	73	64	85	90	125	57	58	68	86	70	61	66	79
1898–99	73	76	81	79	69	94	76	118	61	64	65	81	71	55	63	70
1899–1900	74	72	74	83	62	79	73	92	86	65	86	111	85	74	80	76
1900–1901	90	79	80	78	81	80	81	81	100	66	96	126	67	86	86	84

CHART 3.—*Wholesale prices, 1878–1901, average prices for 1879–1889 being 100.*

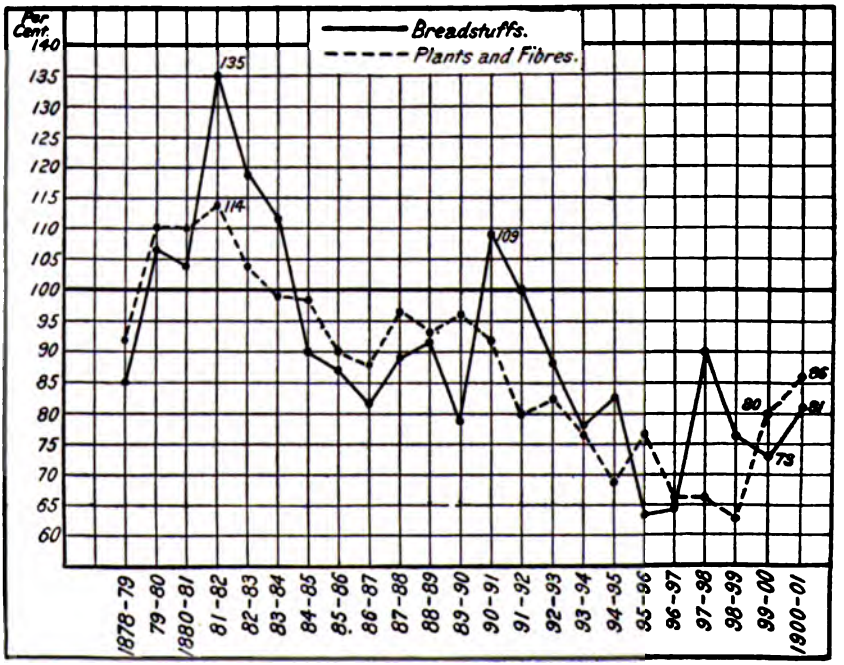

TABLE 3.—INDEX NUMBERS (OR PERCENTAGES) OF PRICES, AVERAGE PRICES OF 1879–1889 Being 100—Continued.

GROUP IV.—METALS, MINERALS, AND LUMBER.

Year ending June 30—	Subgroup 6.—Metals.									Subgroup 7.—Minerals and lumber.							Average.
											Lumber.						
	Pig iron.	Silver.	Gold.	Copper.	Lead.	Zinc.	Quicksilver.	Tin.	Average.	Coal, anthracite.	Spruce.	Yellow pine.	Average.	Petroleum, crude.	Phosphate rock.	Average.	
1878–79.....	79	111	100	103	77	99	107	78	92	87	76	97	86	185	.....	94	93
1879–80.....	133	107	100	131	112	121	94	90	119	79	91	105	98	105	.....	94	105
1880–81.....	112	106	100	121	105	102	90	93	108	104	110	119	115	107	.....	112	110
1881–82.....	116	107	100	119	112	112	89	104	106	99	104	121	112	95	133	110	108
1882–83.....	112	105	100	118	106	101	85	105	109	109	101	102	102	108	99	104	106
1883–84.....	95	104	100	96	90	91	84	90	98	105	96	86	91	121	99	98	98
1884–85.....	85	102	100	77	82	89	94	83	91	103	95	90	92	89	103	96	94
1885–86.....	83	97	100	72	101	93	97	98	90	96	97	91	94	103	99	95	93
1886–87.....	91	92	100	69	100	92	117	103	92	96	101	94	97	77	93	96	94
1887–88.....	92	92	100	93	103	100	122	134	94	105	102	96	99	92	85	99	97
1888–89.....	81	88	100	103	90	99	128	99	89	106	102	97	99	103	89	100	96
1889–90.....	84	91	100	87	88	107	135	97	88	99	115	104	109	115	94	107	99
1890–91.....	81	98	100	99	102	112	144	97	89	98	104	103	103	90	97	101	96
1891–92.....	77	88	100	76	96	100	135	95	84	100	102	94	98	70	102	97	89
1892–93.....	68	79	100	75	88	91	128	95	77	109	104	91	98	68	82	96	88
1893–94.....	62	64	100	63	76	76	111	92	70	105	89	90	90	89	75	96	87
1894–95.....	56	60	100	62	72	69	109	70	68	91	89	88	89	131	86	104	92
1895–96.....	62	64	100	73	72	82	115	64	71	90	95	79	87	154	60	99	89
1896–97.....	57	61	100	73	69	83	111	62	70	103	92	77	84	116	55	94	85
1897–98.....	54	54	100	74	86	87	117	65	70	101	95	77	86	85	55	91	83
1898–99.....	60	57	100	97	93	116	123	96	78	92	97	83	90	133	55	98	89
1899–1900...	99	56	100	111	108	103	151	138	99	98	125	116	120	177	60	118	100
1900–1901...	70	58	100	108	97	85	157	131	85	109	114	95	105	139	64	107	97

CHART 4.—*Wholesale prices, 1878–1901, average prices for 1879–1889 being 100.*

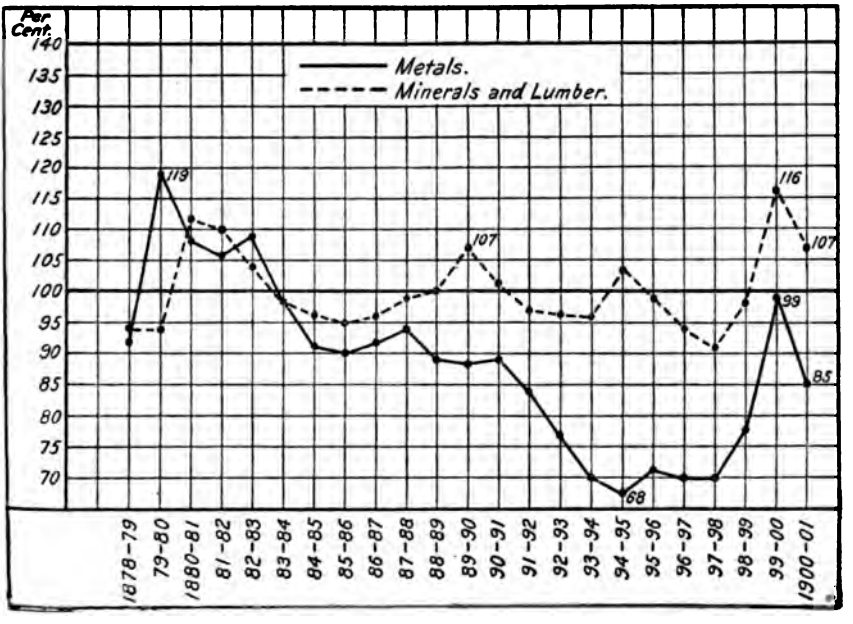

TABLE 3.—INDEX NUMBERS (OR PERCENTAGES) OF PRICES, AVERAGE PRICES OF 1879–1889 BEING 100—Continued.

GROUP V.—MANUFACTURES.

Year ending June 30—	Subgroup 8.—Iron manufactures.						Subgroup 9.—Manufactured mineral products.												
	Bar iron.	Steel rails.	Barb wire.	Steel billets.	Tin plate.	Average.	Coke.	Brick.	Lime.	Cement.	Petroleum, refined.	Rosin.	Turpentine.	White lead.	Glass.	Sulphuric acid.	Muriatic acid.	Alum.	Bicarbonate of soda.	Average.
1878–79	87	102	....	....	....	92	....	70	84	92	125	94	74	113	76	130	133	113	89	97
1879–80	138	154	....	....	131	143	156	107	88	95	99	101	90	129	127	98	115	100	106	110
1880–81	108	147	....	....	108	126	106	88	96	94	122	119	99	118	113	112	122	104	100	105
1881–82	121	136	....	....	106	127	113	121	117	115	97	161	132	105	99	107	101	109	113	110
1882–83	109	100	....	....	105	106	81	114	105	111	99	124	119	97	107	100	100	112	101	105
1883–84	95	84	130	....	100	96	69	100	99	108	109	105	91	88	108	104	100	103	102	101
1884–85	83	66	106	....	93	84	77	83	100	92	101	84	78	81	94	107	99	99	102	92
1885–86	83	78	100	84	91	84	89	96	101	95	101	76	96	97	87	97	93	93	102	95
1886–87	91	88	90	83	88	88	117	102	101	99	87	74	92	97	87	99	92	93	98	95
1887–88	89	79	89	76	94	84	114	98	98	102	92	80	92	93	91	88	86	93	91	95
1888–89	83	67	81	70	88	77	77	88	100	94	93	75	108	97	84	87	86	93	85	89
1889–90	86	77	82	80	91	83	116	91	101	92	94	82	108	103	82	95	93	95	70	92
1890–91	82	72	78	70	104	77	138	80	92	87	94	105	102	101	87	77	77	92	94	92
1891–92	78	72	65	61	106	72	130	75	90	85	82	97	90	101	85	83	77	81	79	86
1892–93	77	71	55	57	106	69	122	73	88	87	72	91	78	116	79	82	84	90	75	86
1893–94	65	62	48	45	101	60	77	71	89	87	66	81	75	92	83	77	65	91	86	78
1894–95	57	55	42	40	80	52	71	72	82	80	80	96	75	82	67	69	63	86	63	73
1895–96	60	66	48	50	74	57	120	71	78	76	94	115	72	84	66	68	64	85	50	78
1896–97	53	57	39	42	70	51	119	65	68	72	84	117	69	81	77	75	69	87	45	78
1897–98	51	43	37	38	63	46	110	75	80	64	73	106	79	81	93	80	77	87	43	81
1898–99	59	52	45	48	70	54	109	82	78	70	91	96	96	84	100	99	97	87	35	90
1899–1900	95	81	75	88	101	89	199	75	79	93	116	101	128	93	102	105	99	91	57	107
1900–1901	64	68	63	52	90	60	136	80	71	93	98	108	102	91	125	111	108	92	37	105

Year ending June 30—	Subgroup 10.—Manufactured agricultural products.										Average.
	Print cloth.	Leather.	Cotton-seed oil.	Linseed oil.	Cotton-seed meal.	Sugar, granulated.	Whisky.	Flour.	Coffee.	Average.	
1878–79	93	92	96	110	.....	113	67	101	122	97	96
1879–80	125	103	105	135	.....	120	78	120	123	120	120
1880–81	109	108	97	103	99	123	86	107	101	107	106
1881–82	106	108	112	106	115	123	117	133	80	113	110
1882–83	102	108	123	100	109	113	121	108	75	105	105
1883–84	96	108	99	103	102	100	119	108	91	102	101
1884–85	86	108	93	97	99	81	104	88	78	90	90
1885–86	83	100	76	82	95	83	95	92	71	87	88
1886–87	92	89	87	75	87	74	104	79	111	89	89
1887–88	93	87	95	94	91	84	84	74	138	91	91
1888–89	106	81	114	104	103	98	91	88	131	101	95
1889–90	97	75	91	111	95	89	63	85	143	95	93
1890–91	86	74	81	107	90	73	90	89	143	90	89
1891–92	82	71	73	72	105	53	90	84	115	85	84
1892–93	99	64	95	84	103	60	92	67	128	94	88
1893–94	81	60	86	86	100	56	76	55	138	82	79
1894–95	73	61	66	100	82	52	63	51	127	76	73
1895–96	77	81	61	81	77	58	52	63	116	77	74
1896–97	68	75	50	59	81	54	40	75	79	70	70
1897–98	61	76	54	71	85	62	46	90	53	68	72
1898–99	63	76	50	73	85	63	71	70	50	68	70
1899–1900	84	88	73	94	98	63	66	71	57	82	90
1900–1901	77	86	74	117	101	69	79	75	62	81	84

CHART 5.—*Wholesale prices, 1878–1901, average prices for 1879–1889 being 100.*

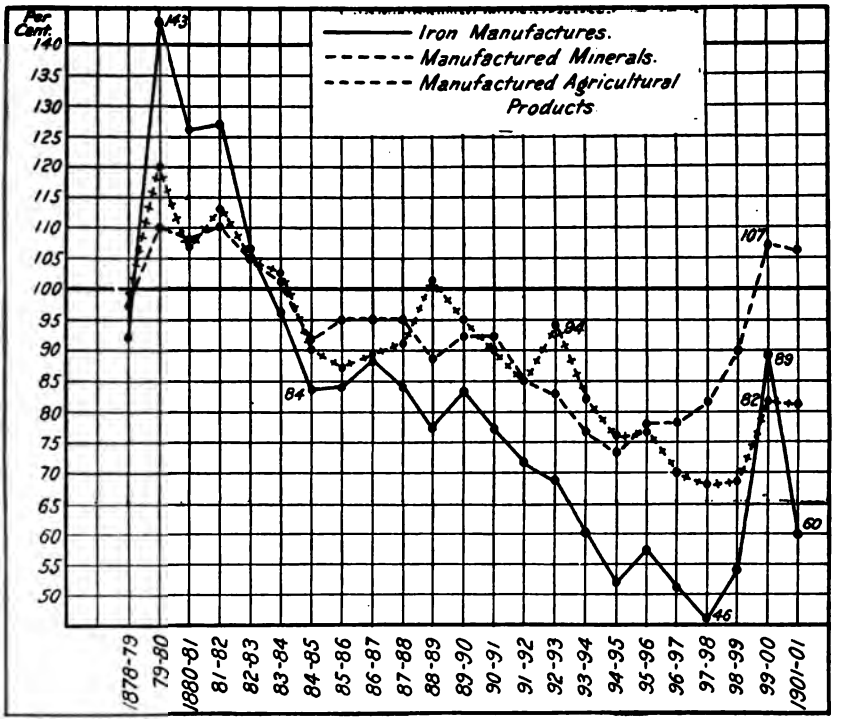

TABLE 4.—AVERAGE YEARLY PRICES.

GROUP I.—LIVE STOCK.

Year ending June 30—	Subgroup 1.—Live stock.			Year ending June 30—	Subgroup 1.—Live stock.		
	Cattle (per 100 pounds).	Hogs (per 100 pounds).	Sheep, (per 100 pounds).		Cattle (per 100 pounds).	Hogs (per 100 pounds).	Sheep (per 100 pounds).
1879–1889	$5.70	$5.72	$5.04	1889–90	$5.06	$3.85	$5.49
				1890–91	5.62	4.88	5.42
1878–79	4.65	3.85	4.26	1891–92	5.75	4.94	5.62
1879–80	4.79	4.38	4.95	1892–93	5.87	6.95	5.56
1880–81	5.54	5.73	5.16	1893–94	5.44	5.67	4.34
1881–82	6.65	7.32	5.52	1894–95	5.96	5.15	4.12
1882–83	5.89	7.94	5.34	1895–96	5.11	4.14	3.99
1883–84	5.63	6.00	5.23	1896–97	5.29	3.61	4.05
1884–85	6.32	5.14	4.46	1897–98	5.50	4.03	4.51
1885–86	5.91	4.43	4.91	1898–99	5.78	3.83	4.74
1886–87	5.33	5.12	4.83	1899–1900	6.38	4.70	5.18
1887–88	5.44	5.57	5.25	1900–1901	5.91	5.36	4.71
1888–89	5.49	5.62	4.76				

TABLE 4.—AVERAGE YEARLY PRICES—Continued.

GROUP II.—ANIMAL PRODUCTS.

Year ending June 30—	Subgroup 2.—Slaughter products.						Subgroup 3.—Dairy products.			
	Beef ham (per barrel).	Tallow (per pound).	Pork (per barrel).	Lard (per pound).	Hides (per pound).	Glue (per pound).	Butter (per pound).	Cheese (per pound).	Milk (per quart).	Eggs (per dozen).
		Cents.		Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
1879–1889	$18.94	5.89	$14.40	8.1	9.8	16.9	23.4	10.9	2.91	20.5
1878–79	17.25	6.26	9.42	6.5	6.9	12.0	18.0	7.8	2.37	18.0
1879–80	16.13	5.91	10.80	6.6	10.8	16.4	23.0	11.1	2.50	16.2
1880–81	19.37	5.86	15.27	6.8	11.1	16.7	25.9	12.0	2.94	22.9
1881–82	21.76	7.56	18.07	11.3	10.8	18.4	30.1	11.7	3.17	22.8
1882–83	20.10	7.90	19.57	11.6	10.5	17.9	26.1	11.8	3.19	24.4
1883–84	24.27	7.10	15.03	8.5	9.9	18.0	23.8	11.8	3.27	24.9
1884–85	20.85	6.15	13.83	6.7	9.4	17.3	21.1	10.2	2.87	22.8
1885–86	17.56	4.77	9.63	6.0	9.6	16.9	19.8	8.6	2.80	16.9
1886–87	20.18	4.15	13.80	6.5	9.3	17.0	21.0	11.4	2.78	19.7
1887–88	16.01	4.41	14.59	7.2	8.4	16.5	21.9	10.9	2.87	19.5
1888–89	13.20	5.11	13.44	7.9	8.1	14.2	21.6	10.1	2.73	15.0
1889–90	13.23	4.29	11.01	6.0	7.8	14.0	17.6	9.5	2.64	18.1
1890–91	14.57	4.69	11.11	6.0	8.6	14.0	20.6	9.1	2.59	21.4
1891–92	18.97	4.67	10.29	6.3	7.8	14.5	20.6	10.2	2.70	20.5
1892–93	16.12	5.37	16.02	9.4	7.2	15.0	22.7	10.3	2.74	22.4
1893–94	16.07	4.89	14.32	7.9	5.0	13.5	20.5	10.4	2.57	18.7
1894–95	17.93	4.63	12.45	7.0	6.9	12.6	17.7	9.5	2.57	19.5
1895–96	14.90	3.77	9.06	5.4	8.2	11.7	16.5	8.5	2.53	16.9
1896–97	17.46	3.15	7.45	3.8	7.9	12.5	14.2	9.6	2.38	16.7
1897–98	22.82	3.46	9.31	4.8	10.0	12.5	15.6	7.9	2.36	16.0
1898–99	18.81	3.52	8.87	5.2	10.1	13.2	16.8	9.1	2.39	18.6
1899–1900	21.36	4.37	9.94	5.8	11.3	15.2	19.9	11.2	2.77	15.7
1900–1901	18.46	4.42	11.06	6.3	9.6	15.5	21.3	10.6	2.74	19.9

GROUP III.—AGRICULTURAL PRODUCTS.

Year ending June 30—	Sub-group 4.—Breadstuffs.						Sub-group 5.—Plants and fibers.						
	Corn (per bushel).	Wheat (per bushel).	Oats (per bushel).	Rye (per bushel).	Barley (per bushel).	Rice (per pound).	Potatoes (per barrel).	Beans (per bushel).	Sugar, raw (per pound).	Hay (per ton).	Flaxseed (per bushel).	Wool (per pound).	Cotton (per pound).
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.			Cents.			Cents.	Cents.
1879–1889	46.1	93.7	31.2	64.9	67.9	5.95	$2.03	$2.29	6.805	$12.88	$1.30	37.8	10.79
1878–79	33.8	86.9	21.0	45.0	77.7	6.05	2.80	1.56	6.820	10.00	1.28	34.7	10.56
1879–80	37.1	109.9	29.5	67.8	68.2	7.28	1.44	1.56	7.977	12.97	1.42	45.7	12.13
1880–81	39.6	99.5	31.4	89.0	82.5	7.00	1.93	1.93	8.327	15.22	1.19	44.7	11.66
1881–82	63.1	124.4	43.9	92.2	90.5	6.62	2.92	3.50	8.279	14.81	1.33	42.7	11.95
1882–83	61.3	104.4	40.2	62.4	75.4	6.06	2.45	2.95	7.829	12.60	1.29	42.0	10.98
1883–84	52.3	93.7	30.6	57.5	63.4	6.12	1.29	2.92	6.921	11.99	1.48	39.0	10.79
1884–85	46.2	79.7	28.6	59.4	56.4	6.03	1.61	2.13	5.618	12.36	1.37	34.0	10.72
1885–86	39.7	81.7	28.0	59.3	53.9	5.78	1.89	1.65	5.889	12.51	1.13	33.2	9.33
1886–87	37.2	77.2	25.9	53.3	55.6	4.81	2.12	1.88	5.201	10.48	1.05	33.5	9.88
1887–88	46.4	75.0	28.7	55.2	69.7	4.62	2.43	2.29	5.572	14.48	1.26	32.0	10.14
1888–89	38.4	93.0	25.1	53.4	63.6	5.22	2.23	2.04	6.441	11.42	1.44	31.7	10.52
1889–90	31.2	81.7	21.8	44.2	51.7	5.38	2.35	2.43	6.015	9.91	1.36	33.2	11.24
1890–91	53.5	97.2	43.5	69.5	68.5	5.56	3.10	2.77	5.000	11.17	1.26	32.7	9.99
1891–92	53.0	89.4	30.3	81.8	60.2	5.15	1.74	2.22	3.340	12.69	.98	30.2	8.77
1892–93	43.4	74.5	30.7	55.5	63.7	4.12	2.47	2.37	3.571	11.87	1.10	29.0	8.32
1893–94	37.3	60.2	29.5	46.3	53.4	3.87	2.45	2.47	3.296	10.67	1.20	22.7	6.91
1894–95	47.8	56.8	29.3	51.0	53.2	5.00	2.27	2.52	3.281	10.65	1.41	18.2	6.38
1895–96	30.9	62.0	19.1	39.3	36.4	4.31	1.34	1.58	3.702	12.87	.95	18.5	6.89
1896–97	23.5	71.5	17.2	34.1	32.8	4.59	1.44	1.19	3.270	8.52	.75	18.7	7.64
1897–98	29.1	99.9	22.7	47.6	43.2	5.06	2.54	1.30	3.924	8.73	1.12	26.6	6.55
1898–99	33.7	70.7	25.1	51.4	46.7	5.58	2.39	1.39	4.383	8.40	1.05	27.1	5.96
1899–1900	34.1	67.7	23.2	54.2	42.4	4.72	1.86	1.97	4.402	11.39	1.44	32.1	8.04
1900–1901	41.3	74.6	25.0	50.8	55.2	4.71	1.65	2.29	4.47	12.39	1.64	25.2	9.46

TABLE 4.—AVERAGE YEARLY PRICES—Continued.

GROUP IV.—METALS, MINERALS, AND LUMBER.

Year ending June 30—	Subgroup 6.—Metals.								Subgroup 7.—Minerals and lumber.				
	Pig iron (per ton).	Silver (per ounce).	Gold (per 23.2 grains).	Copper (per pound).	Lead (per pound).	Zinc (per pound).	Quicksilver (per flask).	Tin (per pound).	Coal (per ton).	Spruce (per 1000 feet).	Yellow pine (per 1000 feet).	Petroleum crude, (per gallon.)	Phosphate rock (per ton).
		Cents.	Cents.	Cents.	Cents.	Cents.		Cents.				Cents.	
1879–1889	$21.97	106.7	100.00	15.5	4.44	4.83	$32.58	21.5	$4.04	$17.08	$20.53	0.848	$6.32
1878–79	17.37	118.0	100.18	15.9	3.36	4.69	34.96	17.3	3.52	12.91	19.96	1.568	.....
1879–80	29.19	114.2	100.00	20.2	4.99	5.85	30.74	19.4	3.17	15.50	21.67	.890	.....
1880–81	24.56	113.0	100.00	18.8	4.65	4.94	29.30	20.1	4.19	18.85	24.44	.910	.....
1881–82	25.49	113.8	100.00	18.4	4.96	5.43	28.89	22.5	4.00	17.79	24.79	.805	8.42
1882–83	24.58	111.9	100.00	18.3	4.72	4.86	27.64	22.5	4.40	17.33	20.92	.913	6.27
1883–84	20.88	111.5	100.00	14.8	3.99	4.42	27.41	19.5	4.22	16.42	17.54	1.024	6.27
1884–85	18.66	109.1	100.00	12.0	3.64	4.32	30.77	17.9	4.15	16.21	18.50	.754	6.49
1885–86	18.27	103.4	100.00	11.1	4.49	4.48	31.64	21.2	3.89	16.65	18.58	.874	6.26
1886–87	20.01	98.4	100.00	10.7	4.44	4.44	38.03	22.3	3.86	17.21	19.23	.657	5.88
1887–88	20.25	97.9	100.00	14.3	4.58	4.83	39.79	28.8	4.22	17.42	19.79	.782	5.35
1888–89	17.80	93.5	100.00	16.0	3.99	4.77	41.61	21.4	4.26	17.46	19.81	.876	5.62
1889–90	18.37	96.8	100.00	13.4	3.93	5.16	43.87	20.9	4.01	19.60	21.29	.975	5.92
1890–91	17.75	105.3	100.00	15.3	4.51	5.42	47.02	21.0	3.96	17.73	21.19	.763	6.16
1891–92	16.99	93.9	100.00	11.7	4.27	4.82	43.87	20.4	4.04	17.42	19.23	.597	6.48
1892–93	14.92	84.4	100.00	11.6	3.93	4.41	41.65	20.4	4.39	17.79	18.71	.579	5.17
1893–94	13.54	68.5	100.00	9.7	3.38	3.67	36.12	19.8	4.24	15.25	18.56	.755	4.73
1894–95	12.31	64.2	100.00	9.7	3.20	3.35	35.57	15.0	3.69	15.29	18.10	1.105	5.43
1895–96	13.66	68.5	100.00	11.2	3.21	3.95	37.58	13.8	3.64	16.17	16.25	1.308	3.79
1896–97	12.49	65.5	100.00	11.3	3.07	4.00	36.35	13.3	4.16	15.67	15.88	.986	3.48
1897–98	11.82	57.5	100.00	11.4	3.82	4.21	38.10	14.1	4.06	16.25	15.75	.727	3.50
1898–99	12.54	60.9	100.00	15.0	4.13	5.62	40.17	20.1	3.72	16.56	17.02	1.130	3.50
1899–1900	21.80	60.2	100.00	17.2	4.55	4.97	49.26	29.9	3.95	21.23	23.90	1.500	3.77
1900–1901	15.56	62.2	100.00	16.8	4.38	4.09	51.00	28.2	4.39	19.54	18.79	1.18	4.07

GROUP V.—MANUFACTURED PRODUCTS.

Year ending June 30—	Subgroup 8.—Iron manufactures.					Subgroup 9.—Mineral manufactures.							
	Bar iron (per pound).	Steel rails (per ton).	Barb wire (per 100 pounds).	Steel billets (per ton).	Tin plate (per box).	Coke (per ton).	Brick (per 1,000).	Lime (per barrel).	Cement (per barrel).	Petroleum, refined (per gallon).	Rosin (per barrel).	Turpentine (per gallon).	White lead (per pound).
	Cents.									Cents.		Cents.	
1879–1889	2.19	$41.63	$4.51	$39.65	$4.83	$1.46	$6.98	$0.99	$1.09	7.74	$1.46	39.7	$6.92
1878–79	1.95	42.27	.....	.....	.....	.....	4.91	.79	.90	9.67	1.37	29.7	7.85
1879–80	3.01	64.23	.....	.....	6.33	2.28	7.48	.82	1.04	7.64	1.48	35.9	8.90
1880–81	2.37	61.25	.....	.....	4.96	1.55	6.17	.94	1.02	9.42	1.74	39.5	8.12
1881–82	2.64	56.60	.....	.....	5.13	1.65	8.49	1.16	1.25	7.50	2.36	52.4	7.24
1882–83	2.39	41.52	.....	.....	5.07	1.18	7.95	1.04	1.21	7.69	1.82	47.4	6.70
1883–84	2.07	35.08	5.90	.....	4.84	1.01	7.02	.98	1.12	8.46	1.54	36.2	6.09
1884–85	1.82	27.39	4.89	.....	4.50	1.12	5.82	.99	1.00	7.80	1.23	31.1	5.61
1885–86	1.81	32.38	4.53	33.21	4.40	1.30	6.73	1.00	1.04	7.82	1.11	33.3	6.72
1886–87	1.99	36.83	4.07	32.79	4.28	1.71	7.12	1.00	1.08	6.72	1.09	36.6	6.68
1887–88	1.95	33.10	4.04	30.04	4.53	1.67	6.85	.97	1.11	7.15	1.17	36.4	6.39
1888–89	1.82	27.96	3.66	27.98	4.27	1.13	6.14	.99	1.02	7.24	1.10	42.7	6.72
1889–90	1.89	32.25	3.70	31.62	4.38	1.70	6.37	1.00	1.00	7.30	1.20	42.8	7.12
1890–91	1.80	29.99	3.29	27.59	5.05	2.02	5.57	.91	.95	7.27	1.54	40.4	6.96
1891–92	1.71	30.00	2.96	24.23	5.13	1.90	5.26	.89	.93	6.36	1.42	35.7	7.00
1892–93	1.68	29.50	2.48	22.65	5.13	1.78	5.13	.87	.95	5.60	1.33	30.9	7.99
1893–94	1.48	25.66	2.19	17.72	4.87	1.12	4.99	.88	.95	5.15	1.19	29.6	6.33
1894–95	1.25	23.00	1.92	16.02	3.89	1.04	5.01	.81	.87	6.23	1.40	29.7	5.68
1895–96	1.32	27.33	2.16	19.73	3.56	1.75	4.97	.77	.83	7.28	1.68	28.5	5.77
1896–97	1.16	28.75	1.75	16.68	3.37	1.74	4.52	.67	.78	6.47	1.71	27.5	5.58
1897–98	1.11	17.96	1.69	14.93	3.05	1.60	5.23	.79	.70	5.68	1.56	31.3	5.58
1898–99	1.30	20.56	2.05	18.99	3.40	1.59	5.76	.77	.76	7.08	1.40	38.3	5.79
1899–1900	2.09	33.88	3.38	34.90	4.90	2.90	5.24	.78	1.01	8.98	1.48	50.8	6.46
1900–1901	1.39	28.60	2.84	20.60	4.35	1.99	4.97	.70	1.01	7.62	1.59	40.4	6.33

APPENDIX IV.

EXPORTS OF PRINCIPAL ARTICLES, BY COUNTRIES.

[See comments, pp. 566-568.]

TABLE 1.—EXPORTS OF IRON AND STEEL AND MANUFACTURES OF, BY COUNTRIES.[1]

	Year ending June 30—		
	1891.	1895.	1900.
Belgium:			
Iron and steel, manufactures of—			
Machinery and steam engines	$120,703	$242,342	$1,723,570
Sewing machines, etc	50,626	86,200	40,949
All other	174,381	172,605	1,347,634
Denmark:			
Iron and steel, manufactures of	50,552	78,783	878,107
France:			
Machinery and steam engines	314,399	359,769	3,016,472
Sewing machines, etc	116,046	98,566	138,392
All other	115,242	225,809	794,986
Germany:			
Machinery, etc	702,442	488,991	4,786,409
Sewing machines	609,750	472,203	1,016,591
All other	337,106	633,941	2,306,095
Italy:			
Machinery and steam engines	50,726	50,030	505,624
All other	42,105	208,581	1,105,108
Russia on the Baltic and White Seas:			
Iron and steel, etc	70,964	228,474	1,417,475
Russia on the Black Sea:			
Iron and steel	33,029	128,345	497,713
Sweden and Norway:			
Iron and steel, etc	60,804	102,031	1,278,837
United Kingdom:			
Builders' hardware	616,378	802,494	2,156,661
Sewing machines	848,493	645,847	1,329,712
Machinery, n. e. s	2,036,786	2,273,289	10,620,050
Nova Scotia:			
Iron and steel	196,622	501,780	1,478,487
Quebec, Ontario, Manitoba, etc.:			
Pig iron	200,755	248,204	353,597
Builders' hardware	226,610	348 589	544,242
Machinery, n. e. s	673,129	1,292,327	5,224,608
Railroad rails	883,344	18,973	2,424,736
All other	859,704	2,727,700	10,105,016
British Columbia:			
Builders' hardware	45,831	34,749	120,829
Machinery	102,974	47,256	705,135
All other	155,481	169,123	716,546
Mexico:			
Builders' hardware	351,583	343,294	510,798
Machinery, n. e. s	917,037	1,672,685	5,619,633
Sewing machines	174,546	132,841	291,882
Steam engines, etc	431,551	163,713	1,204,816
All other	1,589,710	1,390,983	6,774,959
Cuba:			
Car wheels	26,145	11,846	12,296
Castings, n. e. s	64,413	12,853	20,423
Cutlery	4,436	10,497	24,599
Locks and builders' hardware	174,620	160,623	126,988
Machinery, n. e. s	1,317,256	1,286,478	826,520
Nails and spikes—			
Cut	30,694	25,349	57,771
Wire, and others	9,375	15,480	40,160
Printing presses	20,007	5,677	11,468
Railroad bars or rails	82,249	121,662	245,055
Saws and tools	107,291	97,369	222,417
Scales and balances	34,788	27,042	30,382
Sewing machines	112,319	16,114	99,050

[1] Foreign Commerce and Navigation, 1900, Vol. II, pp. 1033 et seq.

TABLE 1.—EXPORTS OF IRON AND STEEL AND MANUFACTURES OF, BY COUNTRIES—Continued.

	Year ending June 30—		
	1891.	1895.	1900.
Cuba—Continued:			
Steam engines—			
Locomotives	$237,827	$240,633	$76,607
Stationary engines	46,766	30,629	32,008
Boilers and parts of engines	181,720	87,306	258,519
Wire	112,357	65,992	162,756
All other iron and steel	608,013	501,867	1,420,637
Porto Rico:			
Builders' hardware	11,757	7,491	15,808
Machinery, n. e. s	18,987	56,642	309,510
Saws and tools	10,754	7,881	18,693
Wire	29,139	13,476	19,612
All other manufactures	52,961	50,016	215,597
Argentina:			
Agricultural implements—			
Mowers and reapers	75,546	817,445	1,194,961
Plows and cultivators	66,945	63,481	388,908
All other	57,557	123,625	221,880
Iron and steel, etc.—			
Machinery, n. e. s	70,580	148,712	620,995
Saws and tools	64,275	119,217	241,517
Sewing machines	24,420	53,504	184,699
Steam engines	6,450	12,767	89,831
All other	85,514	126,171	1,662,089
Brazil:			
Firearms	44,305	65,808	145,208
Builders hardware	50,627	96,199	65,309
Machinery, n. e. s	489,807	354,351	299,008
Saws and tools	184,129	197,687	231,437
Sewing machines	78,393	140,054	135,522
Steam engines—			
Locomotives	818,652	1,648,758	151,941
All other	214,909	42,956	108,981
Wire	10,794	116,920	301,932
All other iron and steel	352,070	254,292	488,975
Chile.			
Agricultural implements	184,915	134,421	89,382
Iron and steel, etc.—			
Builders' hardware	79,952	58,396	27,810
Machinery, n. e. s	288,050	141,325	128,087
Nails and spikes	65,256	96,815	140,488
Sewing machines	17,079	21,894	21,010
Steam engines	138,562	69,491	47,755
All other	313,181	142,883	290,785
Colombia.			
Machinery, n. e. s	131,396	85,547	113,405
Saws and tools	69,550	35,095	32,760
Sewing machines	120,248	39,924	13,723
Steam engines	16,756	14,647	15,212
Wire	48,656	76,791	47,082
All other	208,473	140,646	311,317
Ecuador.			
Machinery, n. e. s	27,505	25,936	71,948
Saws and tools	19,583	18,849	50,756
Sewing machines	16,171	11,492	36,693
Wire	13,998	40,180	54,240
All other	46,937	29,206	78,672
Guiana, British	29,256	89,428	123,240
Guiana, Dutch	4,792	8,725	31,116
Guiana, French	2,040	2,439	4,238
Peru:			
Machinery, n. e. s	122,075	31,997	196,415
Sewing machines	36,105	8,609	59,424
All other	218,859	55,991	239,572
Uruguay:			
Machinery, n. e. s	31,870	18,586	31,332
Sewing machines	5,685	13,317	17,191
All other	60,847	49,849	191,963
Venezuela:			
Machinery, n. e. s	163,450	114,965	49,670
Sewing machines	76,631	46,248	13,854
Steam engines	26,849	40,469	13,801
Wire	96,984	111,841	37,649
All other	330,869	202,548	112,310
China	248,603	118,014	1,049,232
British East Indies	41,634	68,639	1,502,696
Hongkong	60,372	71,441	331,125
Japan:			
Machinery	104,261	97,472	1,061,224
All other iron and steel	125,707	321,171	4,398,981

TABLE 1.—EXPORTS OF IRON AND STEEL AND MANUFACTURES OF, BY COUNTRIES—Continued.

	Year ending June 30—		
	1891.	1895.	1900.
Russia, Asiatic	$20,155	$32,099	$2,384,9
Turkey in Asia	4,523	7,114	103,5
All other countries in Asia	2,924	4,140	28,4
British Australasia:			
Machinery, n. e. s	532,877	321,196	2,306,8
Saws and tools	365,444	314,574	445,7
Sewing machines	268,578	224,875	479,3
Wire	82,345	106,799	1,309,7
All other	1,393,769	576,295	2,858,6
French Oceania	25,774	23,397	23,0
Hawaii	762,896	545,614	5,055,3
Philippine Islands	3,992	13,343	383,8
British Africa:			
Builders' hardware	105,951	179,717	168,1
Machinery	235,635	806,967	786,6
All other iron and steel	144,425	264,808	994,9
Portuguese Africa	510	3,365	90,1
Turkey in Africa (Egypt and Tripoli)	1,501	1,885	109,9

TABLE 2.—EXPORTS OF BREADSTUFFS AND COTTON, BY COUNTRIES.[1]

	Year ending June 30—		
	1891.	1895.	1900.
Belgium:			
Corn	$1,321,173	$613,428	$3,974,5
Rye	77,931		283,5
Wheat	3,850,664	3,047,656	6,230,9
Wheat flour	556,826	562,949	231,7
Cotton—			
Raw	4,808,450	4,436,068	5,680,3
Manufactured	45,841	35,122	60,6
Denmark:			
Corn	460,711	258,110	7,508,6
Rye			49,2
Wheat	43,530	462,137	529,3
Wheat flour	67,283	75,492	310,8
Cotton, raw	10,175	66,225	1,251,3
France.			
Corn	91,668	306,689	2,103,5
Wheat	12,590,322	945,594	930,9
Wheat flour	352,085	4,174	21,4
Cotton, raw	27,329,043	21,938,213	27,729,3
Germany			
Corn	2,042,404	1,672,589	18,776,7
Rye	116,664		352,3
Wheat	295,958	1,522,736	6,495,3
Wheat flour	41,039	740,264	2,700,6
Cotton—			
Raw	50,401,821	43,078,399	63,476,8
Manufactures of	70,272	358,051	385,6
Italy:			
Corn	65,690	26,140	110,5
Wheat			369,0
All other	456	2,099	367,3
Cotton, raw	9,642,281	9,771,190	17,441,1
Netherlands			
Corn	1,002,870	1,203,165	9,556,6
Rye			158,7
Wheat	412,436	2,433,063	6,871,6
Wheat flour	1,364,519	2,762,014	5,005,4
All other	37,581	246,987	3,632,9
Cotton, raw	2,150,580	764,698	2,815,3
Russia on the Baltic and White Seas:			
Corn			320,8
Wheat flour			212,9
All other			26,2
Cotton, raw	6,838,870	4,217,658	2,268,0
Norway, Sweden:			
Corn	8,779	9,500	303,3
Rye			114,4
Wheat	8,337	388,228	103,2
Wheat flour	46,718	40,778	469,1
Cotton, raw	1,709,958	1,093,588	597,2

[1] Foreign Commerce and Navigation II, pp. 1033 et seq.

TABLE 2.—EXPORTS OF BREADSTUFFS AND COTTON, BY COUNTRIES—Continued.

	Year ending June 30—		
	1891.	1895.	1900.
United Kingdom:			
Corn	$8,167,775	$8,126,526	$34,993,528
Wheat	27,231,400	30,458,104	44,418,143
Wheat flour	38,781,917	30,529,897	38,178,543
Cotton, raw	170,863,888	104,101,245	90,202,651
Manufactures of—			
Cloths	687,675	659,444	499,453
All other	288,480	259,280	757,276
Quebec, Manitoba, Ontario:			
Corn	2,466,941	1,418,747	4,206,639
Wheat	2,549,834	2,516,609	1,924,517
Wheat flour	1,394,989	2,515,919	158,434
Cotton, raw	2,586,722	2,840,932	3,393,327
Manufactutes of	377,130	1,921,839	2,321,768
Mexico:			
Corn	389,619	108,272	243,968
Wheat flour	208,792	171,129	147,344
All other	135,225	85,157	168,081
Cotton, raw	1,281,972	2,852,299	814,281
Manufactures of—			
Cloths	444,329	389,544	470,471
All other	158,058	151,924	488,418
Cuba:			
Corn	220,187	216,602	568,990
Wheat flour	591,886	1,301,079	2,047,652
Cotton, manufactures of—			
Cloth	55,911	24,394	445,010
All other	45,888	43,047	167,242

APPENDIX V.

EXPORTS BY CUSTOMS DISTRICTS.

[See comments, pp. 569-571.]

EXPORTS OF LEADING PRODUCTS FROM PRINCIPAL CUSTOMS DISTRICTS.[1]

Articles and customs districts.	Year ending June 30—		
	1891.	1895.	1900.
Raw cotton:			
Baltimore, Md	$8,768,953	$8,307,296	$8,001,052
Boston, Mass	11,844,177	9,514,655	5,393,149
Charleston, S. C	20,933,409	10,374,057	6,812,085
Newport News, Va	3,856,304	1,010,903	1,210,571
New York, N. Y	39,794,201	30,097,656	22,332,668
Norfolk and Portsmouth, Va	15,320,574	5,052,442	1,733,765
Philadelphia, Pa	1,474,500	2,155,436	319,429
Savannah, Ga	29,485,549	15,513,842	28,999,245
Wilmington, N. C	7,758,748	5,920,359	10,553,677
Galveston, Tex	32,567,708	38,949,296	63,271,121
Mobile, Ala	2,525,365	3,342,690	5,078,479
New Orleans, La	97,169,063	57,911,325	66,145,722
Pensacola, Fla	1,101,631	266,534	5,683,684
All other	18,112,871	16,444,537	16,295,794
Total raw cotton	290,712,898	204,900,990	241,832,737
Corn:			
Baltimore, Md	2,547,850	2,505,499	18,189,633
Boston, Mass	1,667,290	1,300,496	5,492,489
Newport News, Va	418,522	1,754,781	5,864,297
New York, N. Y	6,987,913	4,225,248	16,858,594
Philadelphia, Pa	1,316,026	730,094	14,660,282
Galveston, Tex	1,640		2,896,999
New Orleans, La	1,680,148	1,303,442	11,423,335
Chicago, Ill	1,178,744	782,084	2,640,949
Norfolk and Portsmouth, Va	16,400	874,664	2,251,339
All others	1,843,153	1,174,359	4,923,522
Total corn	17,662,687	14,650,767	85,206,499
Wheat:			
Baltimore, Md	3,821,878	4,506,461	5,452,079
Boston, Mass	476,689	3,003,861	8,704,074
New York, N. Y	13,761,477	13,166,259	18,321,476
Philadelphia, Pa	685,561	2,324,003	2,927,913
Galveston, Tex		29,930	9,327,994
New Orleans, La	2,278,112	1,167,200	6,567,218
Puget Sound, Oreg	2,963,629	1,813,526	2,073,905
San Francisco, Cal	20,171,125	8,601,473	6,591,785
Willamette, Oreg	3,482,195	4,231,956	5,082,662
Chicago, Ill	1,050,306	750,919	1,170,569
Duluth, Minn	678,963	924,370	2,058,082
Superior, Mich	698,707	994,277	3,066,546
All other	1,461,610	2,291,432	1,867,463
Total wheat	51,420,272	43,805,663	73,237,099
Wheat flour:			
Baltimore, Md	12,310,787	8,510,458	11,388,582
Boston and Charlestown, Mass	7,366,594	7,398,031	5,701,607
Newport News, Va	2,731,545	3,732,696	8,276,758
New York, N. Y	16,964,475	19,006,385	15,857,229
Philadelphia, Pa	3,967,791	3,497,581	7,727,385
Puget Sound, Wash	644,459	869,106	2,965,748
San Francisco, Cal	5,067,661	2,631,064	3,517,651
Willamette, Oreg	1,677,389	752,091	2,158,945
All other	3,774,415	4,254,516	10,171,428
Total wheat flour	54,705,616	51,651,928	67,760,885

[1] Compiled from Statistical Abstract, 1900, pp. 271-306.

EXPORTS OF LEADING PRODUCTS FROM PRINCIPAL CUSTOMS DISTRICTS—Continued.

Articles and customs districts.	Year ending June 30—		
	1891.	1895.	1900.
Beef, fresh:			
Baltimore, Md	$637,470	$412,861	$1,100,550
Boston and Charlestown, Mass	4,297,076	7,609,069	10,987,442
New York, N. Y	9,253,266	8,298,307	14,627,194
Philadelphia, Pa	860,985	508,086	821,997
Huron, Mich	61,638	.....	888,515
All others	211,565	5,587	1,268,132
Total fresh beef	15,322,054	16,832,860	29,643,830
Hams:			
Baltimore, Md	540,202	235,249	1,979,796
Boston and Charlestown, Mass	2,808,263	5,525,402	7,977,509
New York, N. Y	3,922,731	3,918,573	4,721,314
Philadelphia, Pa	558,799	587,734	1,856,846
Portland and Falmouth Me	446	787	1,093,600
Detroit, Mich	124,978	385,155	1,470,668
All others	295,260	357,667	1,316,634
Total hams	8,245,685	10,960,567	20,416,367
Oils:			
Mineral, crude—			
Delaware	.....	1,688,047	4,664,200
New York, N. Y	3,224,736	258,655	349,440
Philadelphia, Pa	2,522,317	3,194,063	2,334,348
All others	129,399	25,945	16,174
Total minerals, crude	5,876,452	5,161,710	7,364,162
Naphthas—			
Delaware	.....	45,473	131,965
New York, N. Y	857,666	498,019	1,353,816
Philadelphia, Pa	126,704	354,422	499,674
All others	8,686	13,074	31,347
Total naphthas	993,056	910,988	2,016,802
Illuminating—			
Baltimore, Md	739,405	2,108,124	2,819,474
Delaware	.....	1,528,785	829,838
New York, N. Y	29,069,504	23,944,617	38,987,237
Philadelphia, Pa	8,480,211	6,549,202	12,587,702
All others	1,982,081	576,016	805,315
Total illuminating	40,221,201	34,706,844	55,979,566

APPENDIX VI.

Industrial combinations, capitalization,

Name of combination.	Date of organization.	Number of plants controlled.	Capitalization. Amounts authorized by charter. Bonds.	Stock.
Total for all groups		[a] 2,203	$270,127,250	$3,337,411,950
Iron and steel and their products, total		[a] 489	25,949,000	952,850,000
Alabama Consolidated Coal and Iron Co	July 19, 1899	4		5,000,000
American Axe and Tool Co	December 1, 1889	6		2,000,000
American Bridge Co	April 14, 1900	24		70,000,000
American Iron and Steel Mfg. Co	August 21, 1899	5		20,000,000
American Ordnance Co	December 31, 1895	2		2,500,000
American Radiator Co	February 10, 1899	9		10,000,000
American Sheet Steel Co	March 28, 1900	29		53,000,000
American Steel and Wire Co. of New Jersey	January 13, 1899	42		90,000,000
American Steel Casting Co	February 25, 1894	[c] 6	490,000	4,200,000
American Steel Hoop Co	April 14, 1899	15		33,000,000
American Tin Plate Co	December 15, 1898	65		50,000,000
American Wood Working Machine Co. [c]	November 20, 1897	8	2,000,000	4,000,000
Atlas Tack Co	June 1, 1891 [d]	4	1,250,000	700,000
Central Foundry Co	July 15, 1899	14	4,000,000	14,000,000
Continental Gin Co	November 27, 1899	6	750,000	3,000,000
Empire Steel and Iron Co	March 14, 1899	10		5,000,000
Federal Steel Co	September 9, 1898	17		200,000,000
Herring-Hall-Marvin Co	June, 1892 [c]	2		3,300,000
International Heater Co	July 1, 1898	2		1,800,000
International Power Co	January 14, 1899	2	225,000	8,000,000
International Steam Pump Co	March 24, 1899	6		27,500,000
National Enameling and Stamping Co	January 29, 1899	10		30,000,000
National Malleable Castings Co	January 30, 1891	4		3,000,000
National Saw Co	May 23, 1890	4		1,000,000
National Shear Co	May 23, 1898 [c]	3		3,000,000
National Steel Co	February 25, 1899	22	4,434,000	59,000,000
National Tube Co	June 16, 1899	26		80,000,000
Niles-Bement-Pond Co	August 11, 1899	4		8,000,000
Ohio Tool Co., of Auburn, N. Y	September 12, 1893	2		350,000
Otis Elevator Co	November 28, 1898	6		11,000,000
Pittsburg Stove and Range Co	September 1, 1899	8		2,000,000
Republic Iron and Steel Co	May 3, 1899	36		55,000,000
Shelby Steel Tube Co	February 9, 1900	14		15,000,000
Standard Chain Co	February 2, 1900	11	700,000	3,000,000
Steel Tired Wheel Co	January 26, 1897	5		4,000,000
Susquehanna Iron and Steel Co	June, 1899	7		1,500,000
United Shoe Machinery Co	February 8, 1899	5		25,000,000
United States Cast Iron Pipe and Foundry Co.	March 13, 1899	17	1,500,000	30,000,000
Virginia Iron, Coal, and Coke Co	January 2, 1899	21	10,000,000	10,000,000
Wheeling Steel and Iron Co	April 16, 1892	7	600,000	5,000,000

[a] The number of plants reported in this table does not agree with the number reported in Tables 1 and 2, because in a number of instances combinations operate plants engaged in different industries. In preparing this list the name of the combination has been placed in the group of industries to which it would be assigned according to its product of chief value. The number also includes 174 plants reported as idle during the census year.

[b] Declined to furnish information.

[c] Went into receivership in 1899.

APPENDIX VI.

nd dividends paid (from census of 1900).

Capitalization—Continued.				Dividends paid during census year.				
Amounts issued.								
Bonds.	Stock.			Rate.		Total.	On preferred stock.	On common stock.
	Total.	Preferred.	Common.	On preferred.	On common.			
$216,412,759	$2,868,788,109	$1,066,525,963	$1,802,262,146	.....	.....	.....	.....	.....
20,614,000	763,806,296	349,763,485	414,042,810	.....	.....	.....	.....	.....
.....	4,944,800	2,463,200	2,481,600	7 p. c..	None ..	$172,424	$172,424	.....
.....	1,936,250	.....	1,936,250	(b)	.....	.....	.....	.....
.....	61,055,600	30,527,800	30,527,800	None .	None ..	.....	.....	.....
.....	4,700,000	3,000,000	1,700,000	5 p. c..	20 p. c..	465,000	125,000	$340,000
.....	2,491,300	1,000,000	1,491,300	None .	None ..	.....	.....	.....
.....	7,893,000	3,000,000	4,893,000	7 p. c..	None ..	210,000	210,000	.....
.....	49,000,000	24,500,000	24,500,000	None .	None ..	.....	.....	.....
.....	90,000,000	40,000,000	50,000,000	7 p. c..	5 p. c...	4,050,000	2,800,000	1,250,000
490,000	3,406,800	1,195,700	2,211,100	7 p. c..	6 p. c...	216,365	83,699	132,666
.....	33,000,000	14,000,000	19,000,000	7 p. c..	None ..	980,000	980,000	.....
.....	46,325,000	18,325,000	28,000,000	7 p. c..	None ..	1,282,750	1,282,750	.....
1,232,000	3,445,000	1,760,000	1,685,000	None .	None ..	.....	.....	.....
232,000	700,000	.....	700,000	.....	None ..	.....	.....	.....
4,000,000	14,000,000	7,000,000	7,000,000	None .	None ..	.....	.....	.....
.....	2,000,000	.....	2,000,000	.....	None ..	.....	.....	.....
.....	4,649,500	2,368,100	2,281,400	6 p. c..	None ..	142,086	142,086	.....
.....	99,745,200	53,260,900	46,484,300	6 p. c..	3½ p. c..	4,938,815	3,195,654	1,743,161
.....	3,300,000	1,800,000	1,500,000	None .	None ..	.....	.....	.....
.....	1,095,800	551,900	543,900	.....	.....	.....	.....	.....
225,000	8,000,000	600,000	7,400,000	6 p. c..	None ..	360,000	360,000	.....
.....	13,850,000	8,850,000	5,000,000	6 p. c..	None ..	531,000	531,000	.....
.....	21,696,700	7,658,600	14,038,100	7 p. c..	None ..	536,102	536,102	.....
.....	3,000,000	.....	3,000,000	.....	None ..	.....	.....	.....
.....	1,000,000	600,000	400,000	4 p. c..	None ..	24,000	24,000	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....
2,811,000	59,000,000	27,000,000	32,000,000	7 p. c..	None ..	1,890,000	1,890,000	.....
.....	80,000,000	40,000,000	40,000,000	7 p. c..	None[c] .	2,800,000	2,800,000	.....
.....	7,000,000	2,000,000	5,000,000	6 p. c..	None ..	120,000	120,000	.....
.....	350,000	.....	350,000	.....	None ..	.....	.....	.....
.....	10,850,100	4,500,000	6,350,100	6 p. c..	None ..	270,000	270,000	.....
.....	1,991,150	994,500	996,650	7 p. c..	None ..	52,500	52,500	.....
.....	48,204,000	20,852,000	27,352,000	7 p. c..	None ..	1,459,640	1,459,640	.....
.....	13,150,500	5,000,000	8,150,500	3½ p. c.	None ..	175,000	175,000	.....
608,000	2,268,600	1,001,400	1,267,200	None .	None ..	.....	.....	.....
.....	3,346,800	1,444,300	1,902,500	3 p. c..	3 p. c...	100,404	43,329	57,075
.....	1,500,000	.....	1,500,000	.....	18 p. c..	270,000	.....	270,000
.....	18,261,495	9,331,385	8,930,110	6 p. c..	8 p. c...	1,249,085	537,251	711,784
1,500,000	25,000,000	12,500,000	12,500,000	3½ p. c.	None ..	437,500	437,500	.....
8,940,000	8,970,000	.....	8,970,000	.....	None ..	.....	.....	.....
576,000	2,678,700	2,678,700	.....	8 p. c.[b]	.....	199,334	199,334	.....

[a] Reorganized July 18, 1900.
[c] Reorganized as Herring-Hall-Marvin Safe Co., August 2, 1900.
[f] Went into bankruptcy during census year and is now out of existence.
[c] A reserve fund of $2,400,000, equal to a 6 per cent dividend on the common stock, was set aside out of the profits of that year, and cash for the same was on deposit in banks on June 30, 1900.
[b] Also a 10 per cent stock dividend of $245,200.

Industrial combinations, capitalization,

Name of combination.	Date of organization.	Number of plants controlled.	Capitalization. Amounts authorized by charter. Bonds.	Stock.
Food and allied products, total		[c] 277	$32,943,750	$305,875,000
American Beet Sugar Co	March 24, 1899	4		20,000,000
American Caramel Co	March 28, 1898	2	600,000	2,000,000
American Cereal Co	June, 1891	6	1,600,000	3,400,000
American Chicle Co	June 3, 1899	6		9,000,000
American Pastry and Manufacturing Co	July 7, 1899	6		3,000,000
American Preserve Co	December 21, 1897	1		125,000
American Sugar Refining Co	January 10, 1891	5	10,000,000	75,000,000
California Fruit Canners' Association	July 3, 1899	20		3,500,000
Columbia River Packers' Association	February, 1899	4		2,000,000
Continental Biscuit Co	June 15, 1898	5		500,000
Continental Creamery Co	March 1, 1900	13		500,000
Glucose Sugar Refining Co	August 3, 1897	5		40,000,000
National Biscuit Co	February 3, 1898	95		55,000,000
National Rice Milling Co	May, 1892 [a]	5		5,000,000
National Sugar Refining Co	June 2, 1900	3		20,000,000
Pacific Coast Biscuit Co	September 15, 1899	12	1,500,000	4,000,000
Pillsbury-Washburn Flour Mills Co., Ltd	October, 1889	5	4,243,750	4,850,000
Royal Baking Powder Co	March 1, 1899	3		20,000,000
Seacoast Packing Co	April 5, 1899	36		8,000,000
Standard Sardine Co. [b]	March 6, 1899	25		5,000,000
United States Flour Milling Co	April 27, 1899	16	15,000,000	25,000,000
Chemicals and all allied products, total		[c] 295	13,750,000	349,299,400
American Agricultural Chemical Co	April, 1899	27		40,000,000
American Cotton Oil Co	October 14, 1889	57	5,000,000	34,799,400
American Linseed Co	December 5, 1898	47		33,500,000
Barrett Manufacturing Co., The	January 1, 1896	12	2,500,000	5,000,000
Celluloid Co., The	November 28, 1890	1		6,000,000
Continental Cotton Oil Co	April 2, 1899	7		6,000,000
Fisheries Co., The	May 25, 1900	5	500,000	3,000,000
General Chemical Co	February 14, 1899	17		25,000,000
Grasselli Chemical Co	June 10, 1885	7		7,500,000
National Salt Co	March 18, 1899	31		12,000,000
National Starch Manufacturing Co	April 12, 1890 [d]	22	4,500,000	10,500,000
Standard Oil Co	August 1, 1882	26		110,000,000
United Starch Co	August 31, 1899 [d]	3	1,250,000	6,000,000
Virginia-Carolina Chemical Co	September 12, 1895	33		50,000,000
Metals and metal products other than iron and steel, total.		[c] 113	10,300,000	235,600,000
Amalgamated Copper Co	April 27, 1899	4		75,000,000
American Brass Co	March 1, 1899	4		20,000,000
American Shot and Lead Co	August 27, 1890	12		3,000,000
American Smelting and Refining Co	April 4, 1899	18		65,000,000
American Type Founders Co	February 8, 1892	12	1,000,000	4,000,000
Cherokee-Lanyon Spelter Co	January 1, 1896	14	600,000	600,000
International Silver Co	November 19, 1898	13	4,500,000	20,000,000
Magnus Metal Co	June, 1899	5		3,000,000
National Lead Co	December 7, 1891	17		30,000,000
New Jersey Zinc Co	June 30, 1880	8	1,700,000	10,000,000
Standard Sanitary Manufacturing Co	January 1, 1900	6	2,500,000	5,000,000
Liquors and beverages, total		[c] 258	64,584,500	212,547,550
American Distributing Co	August 10, 1891	2		5,000,000
American Malting Co	September, 1897	36	5,000,000	30,000,000
American Spirits Manufacturing Co	August 22, 1895	13	2,000,000	35,000,000
California Wine Association	August 10, 1894	9		10,000,000
Chicago Breweries, Ltd	April, 1889	2	1,948,000	3,000,000

[a] Reorganized in December, 1900.
[b] Now out of business.
[c] The number of plants reported in this table does not agree with the number reported in Tables 1 and 2, because in a number of instances combinations operate plants engaged in different industries. In preparing this list the name of the combination has been placed in the group of industries to which it would be assigned according to its product of chief value. The number also includes 174 plants reported as idle during the census year.

and dividends paid—Continued.

Capitalization—Continued.				Dividends paid during census year.				
Amounts issued.								
Bonds.	Stock.			Rate.		Total.	On preferred stock.	On common stock.
	Total.	Preferred.	Common.	On preferred.	On common.			
$12,725,900	$277,618,300	$117,337,600	$160,280,700	.....	.....	.....	.....	.....
.....	19,000,000	4,000,000	15,000,000	6 p. c..	None ..	$240,000	$240,000	.....
500,000	2,000,000	1,000,000	1,000,000	8 p. c..	None ..	80,000	80,000	.....
1,187,300	3,341,700	.....	3,341,700	.....	8 p. c...	267,336	.....	$267,336
.....	9,000,000	3,000,000	6,000,000	6 p. c..	8½ p. c..	690,000	180,000	510,000
.....	2,993,100	993,100	2,000,000	None .	None ..	.....	.....	.....
.....	125,000	.....	125,000	.....	6 p. c...	7,500	.....	7,500
.....	73,936,000	36,968,000	36,968,000	7 p. c..	9 p. c...	5,914,880	2,587,760	3,327,120
.....	2,780,500	.....	2,780,500	.....	60c. per share monthly	83,175	.....	83,175
.....	1,725,000	.....	1,725,000	.....	2½ p. c..	43,125	.....	43,125
.....	350,000	.....	350,000	.....	7 p. c...	24,500	.....	24,500
.....	410,000	410,000	.....	None .	.....	.....	.....	.....
.....	36,646,600	12,619,300	24,027,300	7 p. c..	6 p. c...	2,360,628	919,006	1,441,622
.....	53,028,700	23,792,700	29,236,000	7 p. c..	4 p. c...	2,840,193	1,670,753	1,169,440
.....	3,187,000	1,320,000	1,867,000	None .	None ..	.....	.....	.....
.....	20,000,000	10,000,000	10,000,000	None .	None ..	.....	.....	.....
1,000,000	2,850,000	900,000	1,950,000	None .	None ..	.....	.....	.....
4,034,600	4,850,000	2,425,000	2,425,000	8 p. c..	4 p. c...	291,000	194,000	97,000
.....	20,000,000	10,000,000	10,000,000	6 p. c..	None ..	600,000	600,000	.....
.....	8,000,000	3,000,000	5,000,000	None .	None ..	.....	.....	.....
.....	5,000,000	2,000,000	3,000,000	None .	None ..	.....	.....	.....
6,004,000	8,394,700	4,909,500	3,485,200	None .	None ..	.....	.....	.....
9,294,000	278,357,295	78,151,084	200,206,211	.....	.....	.....	.....	.....
.....	33,577,900	17,044,900	16,533,000	6 p. c..	None ..	1,024,740	1,024,740	.....
3,000,000	30,435,700	10,198,600	20,237,100	6 p. c..	4 p. c...	1,421,400	611,916	809,484
.....	33,560,000	16,750,000	16,750,000	7 p. c..	None ..	1,172,500	1,172,500	.....
2,304,000	3,319,700	.....	3,319,700	.....	10 p. c..	329,470	.....	329,470
.....	5,925,000	.....	5,925,000	.....	6¼ p. c...	370,318	.....	370,318
.....	2,924,845	1,364,584	1,560,261	7 p. c..	6 p. c...	189,137	95,521	93,616
.....	3,000,000	2,000,000	1,000,000	None .	None ..	.....	.....	.....
.....	15,427,900	8,260,000	7,167,900	6 p. c..	4 p. c...	660,460	518,078	142,382
.....	3,635,850	.....	3,635,850	.....	7 p. c...	258,860	.....	258,860
.....	12,000,000	5,000,000	7,000,000	7 p. c..	None ..	265,180	265,180	.....
3,040,000	8,516,900	4,066,200	4,450,700	4 p. c..	None ..	88,776	88,776	.....
.....	97,246,600	[b]300	97,246,300	6 p. c..	45 p. c..	43,471,242	8,132	43,463,110
950,000	4,846,900	1,466,500	3,380,400	3 p. c..	None ..	43,995	43,995	.....
.....	24,000,000	12,000,000	12,000,000	8 p. c..	4 p. c...	1,199,525	809,525	390,000
8,565,000	208,505,600	50,315,500	158,190,100	.....	.....	.....	.....	.....
.....	75,000,000	.....	75,000,000	.....	8 p. c...	4,500,000	.....	4,500,000
.....	6,000,000	.....	6,000,000	.....	5 p. c...	225,000	.....	225,000
.....	2,271,500	.....	2,271,500	.....	None ..	.....	.....	.....
.....	54,800,000	27,400,000	27,400,000	7 p. c..	None ..	1,918,000	1,918,000	.....
1,000,000	4,000,000	.....	4,000,000	.....	4 p. c...	160,000	.....	160,000
600,000	600,000	.....	600,000	.....	None ..	.....	.....	.....
3,900,000	15,052,200	5,107,500	9,944,700	1½ p. c.	None ..	89,371	89,371	.....
.....	2,000,000	1,000,000	1,000,000	8 p. c..	10 p. c..	180,000	80,000	100,000
.....	29,809,400	14,904,000	14,905,400	7 p. c..	1 p. c...	1,192,334	1,043,280	149,054
1,261,000	10,000,000	.....	10,000,000	.....	6 p. c...	600,000	.....	600,000
1,804,000	3,972,500	1,904,000	2,068,500	None .	None ..	.....	.....	.....
55,529,142	193,301,158	62,503,169	130,797,989	.....	.....	.....	.....	.....
.....	2,650,000	.....	2,650,000	.....	None ..	.....	.....	.....
4,000,000	28,940,000	14,440,000	14,500,000	3½ p. c.	None ..	505,400	505,400	.....
1,898,560	35,000,000	7,000,000	28,000,000	None .	None ..	.....	.....	.....
.....	3,162,700	.....	3,162,700	.....	6 p. c...	189,762	.....	189,762
1,948,000	2,000,000	.....	2,000,000	.....	.....	.....	.....	.....

[a] Acquired by the National Starch Co., April, 1900.

[b] During the year the common stock was increased $38,550,700, and the preferred stock was decreased $3,968,400.

Name of combination.	Date of organization.	Number of plants controlled.	Capitalization	
			Amounts authorized by charter.	
			Bonds.	Stock.
Chicago Consolidated Brewing and Malting Co.	June, 1890	4	$3,166,000	$5,000,000
Cleveland and Sandusky Brewing Co	June 7, 1898	9	6,000,000	6,000,000
Connecticut Breweries Co., Ltd	1890	2		700,000
Consumers Brewing Co. [a]	October 26, 1896	5	1,900,000	3,800,000
Erie Brewing Co	March 20, 1899	4	1,000,000	1,500,000
Evansville Brewing Ass'n	March, 1894	2	500,000	400,000
Indianapolis Brewing Co. [b]		3		
Kentucky Distilleries and Warehouse Co	February 3, 1899	50	5,000,000	32,000,000
Maryland Brewing Co	December 23, 1898	16	7,500,000	6,500,000
New Orleans Brewing Co	October 6, 1899	4	300,000	2,790,000
New York and Kentucky Co	January 25, 1900	3		2,000,000
Paterson Brewing and Malting Co	July 1, 1899	6	3,000,000	3,000,000
Pennsylvania Central Brewing Co	August 23, 1897	12	2,800,000	5,600,000
Pittsburg Brewing Co	February 4, 1899	18	6,500,000	13,000,000
St. Louis Brewing Ass'n	June 1, 1889	11	5,250,000	5,250,000
San Francisco Breweries, Ltd	April 30, 1899	6	2,425,000	1,023,300
Seattle Brewing and Malting Co	1898	3		1,000,000
Springfield Breweries, Ltd	June 1, 1890	2	145,500	509,250
Springfield Breweries Co	April 19, 1899	3	1,150,000	1,375,000
Standard Distilling and Distributing Co	June 27, 1898	10		24,000,000
United Breweries Co	August 8, 1898	12	3,500,000	5,600,000
United States Brewing Co., Ltd	1889	5	2,000,000	3,500,000
United States Brewing Co	September 1, 1890	6	3,500,000	5,000,000
Vehicles for land transportation, total		[c] 72	10,300,000	193,000,000
American Bicycle Co	May 12, 1899	35	10,000,000	30,000,000
American Car and Foundry Co	February 20, 1899	17		60,000,000
Pressed Steel Car Co	January 12, 1899	4		25,000,000
Pullman Co., The	December, 1899	5		74,000,000
Standard Wheel Co	August 20, 1892	6	300,000	1,000,000
Southern Car and Foundry Co	June 1, 1899	5		3,000,000
Tobacco, total		[c] 41		205,000,000
American Snuff Co	March 12, 1900	9		25,000,000
American Tobacco Co	January 21, 1890	15		70,000,000
Continental Tobacco Co	November 28, 1898	9		100,000,000
Havana-American Co., The	November 9, 1899	8		10,000,000
Textiles, total		[c] 72	39,250,000	133,000,000
American Felt Co	February 9, 1899	5	500,000	5,000,000
American Grass Twine Co	June 8, 1899	3		15,000,000
American Thread Co	March 10, 1898	10	6,000,000	12,000,000
American Woolen Co	March 29, 1899	30		65,000,000
Mt. Vernon-Woodberry Cotton Duck Co	August 29, 1899	7	14,000,000	9,500,000
New England Cotton Yarn Co	July 15, 1899	9	6,500,000	11,500,000
Standard Rope and Twine Co	November 1, 1895	5	10,500,000	12,000,000
United States Finishing Co	July 1, 1899	3	1,750,000	3,000,000
Leather and its finished products, total		[c] 108	20,000,000	199,000,000
American Hide and Leather Co	August 29, 1899	30	10,000,000	35,000,000
Elk Tanning Co	April 17, 1893	23		12,500,000
Penn Tanning Co	April 13, 1898	14		13,500,000
Union Tanning Co	April 17, 1898	18		10,000,000
United States Leather Co	February 25, 1893	23	10,000,000	128,000,000

[a] In hands of receivers since April 1, 1900.

[b] This company declined to furnish the information, stating that their capital was nominal, the real owners being the Indianapolis Brewers, Limited, London, and as the statement, if given, would be misleading, they preferred to make no report.

and dividends paid—Continued.

Capitalization—Continued. Amounts issued.				Dividends paid during census year.				
Bonds.	Stock.			Rate.		Total.	On preferred stock.	On common stock.
	Total.	Preferred.	Common.	On preferred.	On common.			
$3,166,000	$5,000,000	.....	$5,000,000	.....	¼ p. c....	$25,000	.....	$25,000
4,773,000	4,773,000	$2,386,500	2,386,500	6 p. c..	None ..	143,190	$143,190	.....
.....	700,000	350,000	350,000	8 p. c..	None ..	28,000	28,000	.....
1,642,000	3,800,000	1,900,000	1,900,000	None .	None ..	.....	.....	.....
944,000	1,196,700	426,700	770,000	7 p. c..	None ..	29,869	29,869	.....
500,000	400,000	.....	400,000	.....	None ..	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	29,000,000	10,500,000	18,50,000	None .	None ..	.....	.....	.....
7,500,000	5,500,000	2,750,000	2,750,000	6 p. c..	None ..	165,000	165,000	.....
278,482	1,691,484	1,096,269	595,215	None .	None ..	.....	.....	.....
.....	2,000,000	1,000,000	1,000,000	7 p. c..	None ..	29,166	29,166	.....
2,265,000	3,000,000	.....	3,000,000	.....	None ..	.....	.....	.....
2,700,000	5,600,000	2,800,000	2,800,000	None .	None ..	.....	.....	.....
6,319,000	12,062,350	6,100,100	5,962,250	7 p. c..	4 p. c...	665,497	427,007	238,490
4,961,600	5,088,624	.....	5,088,624	.....	$2.70 p. share.	137,398	.....	137,398
2,425,000	1,023,300	611,100	412,200	None .	None ..	.....	.....	.....
.....	1,000,000	.....	1,000,000	.....	6 p. c...	60,000	.....	60,000
145,500	485,000	242,500	242,500	8 p. c..	6 p. c...	33,950	19,400	14,550
1,150,000	1,265,000	1,150,000	115,000	8 p. c..	None ..	92,000	92,000	.....
.....	24,000,000	8,000,000	16,000,000	None .	None ..	.....	.....	.....
3,413,000	5,463,000	.....	5,463,000	.....	None ..	.....	.....	.....
2,000,000	3,500,000	1,750,000	1,750,000	8 p. c..	5 p. c...	227,500	140,000	87,500
3,500,000	5,000,000	.....	5,000,000	.....	70c. per share.	35,000	.....	35,000
10,300,000	189,680,000	52,840,000	136,840,000	.....	.....	.....	.....	.....
10,000,000	30,000,000	10,000,000	20,000,000	None .	None ..	.....	.....	.....
.....	58,180,000	29,090,000	29,090,000	7 p. c..	None ..	2,036,000	2,036,300	.....
.....	25,000,000	12,500,000	12,500,000	7 p. c..	6 p. c...	1,250,000	875,000	375,000
.....	74,000,000	.....	74,000,000	.....	8 p. c...	5,024,000	.....	5,024,000
300,000	1,000,000	500,000	500,000	6 p. c..	None ..	30,000	30,000	.....
.....	1,500,000	750,000	750,000	None .	None ..	.....	.....	.....
.....	197,184,628	76,844,600	120,340,028	.....	.....	.....	.....	.....
.....	23,001,700	12,000,000	11,001,700	None .	None ..	.....	.....	.....
.....	68,500,000	14,000,000	54,500,000	8 p. c..	6 p. c...	4,390,000	1,120,000	3,270,000
.....	97,690,700	48,844,600	48,846,100	7 p. c..	None ..	3,419,122	3,419,122	.....
.....	7,992,228	2,000,000	5,992,228	7 p. c..	None ..	140,000	140,000	.....
36,944,000	109,514,175	33,417,775	76,096,400	.....	.....	.....	.....	.....
441,000	3,254,600	1,627,300	1,627,300	6 p. c.	None ..	97,638	97,638	.....
.....	14,118,000	.....	14,118,000	.....	None ..	.....	.....	.....
5,798,000	8,490,475	4,890,475	3,600,000	5 p. c.	10 p. c .	604,524	244,524	360,000
.....	49,501,100	20,000,000	29,501,100	7 p. c.	None ..	1,400,000	1,400,000	.....
13,000,000	9,500,000	.....	9,500,000	.....	1½ p. c	142,500	.....	142,500
5,577,000	10,000,000	5,000,000	5,000,000	7 p. c.	None ..	350,000	350,000	.....
10,378,000	12,000,000	.....	12,000,000	.....	None ..	.....	.....	.....
1,750,000	2,650,000	1,900,000	750,000	7 p. c.	None ..	133,000	133,000	.....
13,805,000	184,015,200	75,282,300	108,732,900	.....	.....	.....	.....	.....
8,525,000	24,500,000	13,000,000	11,500,000	None .	None ..	.....	.....	.....
.....	12,319,900	.....	12,319,900	.....	$1.50 p. share.	184,799	.....	184,799
.....	13,380,900	.....	13,380,900	.....	None ..	.....	.....	.....
.....	8,649,800	.....	8,649,800	.....	$1.50 p. share.	129,747	.....	129,747
5,280,000	125,164,600	62,282,300	62,882,300	6 p. c..	None ..	3,736,376	3,736,376	.....

• The number of plants reported in this table does not agree with the number reported in Tables 1 and 2, because in a number of instances combinations operate plants engaged in different industries. In preparing this list the name of the combination has been placed in the group of industries to which it would be assigned according to its product of chief value. The number also includes 174 plants reported as idle during the census year.

Industrial combinations, capitalization.

Name of combination.	Date of organization.	Number of plants controlled.	Capitalization. Amounts authorized by charter. Bonds.	Stock.
Paper and printing, total		[a]119	$41,250,000	$142,000,000
American Lithographic Co	January 1, 1896	1	3,000,000	4,000,000
American Straw Board Co	May 29, 1889	17	1,250,000	6,000,000
American Writing Paper Co	July 25, 1899	25	17,000,000	25,000,000
International Paper Co	January 31, 1898	32	10,000,000	45,000,000
National Wall Paper Co	June, 1892	18	8,000,000	30,000,000
Union Bag and Paper Co	February 27, 1899	17		27,000,000
United States Envelope Co	June, 1898	9	2,000,000	5,000,000
Clay, glass, and stone products, total		[a]203	9,200,000	72,490,000
American Cement Co	March 11, 1890	3		500,000
American Clay Manufacturing Co.[c]	March 1, 1900	28	2,500,000	10,000,000
American Window Glass Co	July 31, 1899	39		17,000,000
Baltimore Brick Co	June 23, 1899	28	1,500,000	2,160,000
Illinois Brick Co	February 13, 1900	36		9,000,000
International Pulp Co	March, 1893	1		5,000,000
Macbeth-Evans Glass Co	July 7, 1899	7		2,200,000
National Fire Proofing Co	December 20, 1899	5		2,000,000
National Glass Co	November 1, 1899	19	2,000,000	4,000,000
Pittsburg Plate Glass Co	April 1, 1895[d]	10	2,500,000	10,000,000
Suburban Brick Co	December 29, 1898	5	50,000	200,000
Trenton Potteries Co	May 27, 1892	6		3,000,000
United States Clay Manufacturing Co.[c]	December 26, 1899	2		240,000
United States Glass Co	February 12, 1891	13		5,000,000
Western Stone Co	September 16, 1889	1	650,000	2,250,000
Lumber and its remanufactures, total		[a]59	1,800,000	43,500,000
American School Furniture Co	March 13, 1899	17	1,500,000	10,000,000
Brunswick-Balke-Collender Co	January 30, 1884	2		1,500,000
Diamond Match Co	February 13, 1889	9		15,000,000
Heywood Bros. & Wakefield Co	March 16, 1897	4		6,000,000
National Casket Co	July 1, 1890	11		6,000,000
National Cooperage and Woodenware Co	October 21, 1899	6		500,000
United States Bobbin and Shuttle Co	July 31, 1899	7	300,000	2,000,000
Yellow Pine Co	November 12, 1891	3		2,500,000
Miscellaneous industries, total		[a]97	800,000	293,250,000
American Glue Co	July 7, 1894	6		1,800,000
American Hard Rubber Co	April 21, 1898	3		2,500,000
American Ice Co	March 11, 1899	7		40,000,000
American Shipbuilding Co	March 16, 1899	11		30,000,000
American Soda Fountain Co	February 4, 1891	7		3,750,000
Central Fireworks Co	June 8, 1896	6		3,500,000
Commonwealth Roofing Co	June 6, 1899	6		500,000
Consolidated Ice Co[e]	April 1, 1899	7		4,000,000
Consolidated Railway Electric Lighting and Equipment Co.	January 6, 1900	3		16,000,000
Electric Boat Co	February 7, 1899	3		10,000,000
General Aristo Co	August 4, 1899	5		5,000,000
National Carbon Co	January 16, 1899	5		10,000,000
Pittsburg Coal Co	September 1, 1899	5		64,000,000
Rubber Goods Manufacturing Co	March 26, 1899	14		50,000,000
United States Rubber Co	March 30, 1892	5		50,000,000
United States Whip Co	December 29, 1892	4	800,000	2,200,000

[a] The number of plants reported in this table does not agree with the number reported in Tables 1 and 2, because in a number of instances combinations operate plants engaged in different industries. In preparing this list the name of the combination has been placed in the group of industries to which it would be assigned according to its product of chief value. The number also includes 174 plants reported as idle during the census year.

[b] Of this amount, $3,236,500 is for divisional mortgage bonds, assumed at time of incorporation for prior mortgages.

[c] Acquired by the American Sewer Pipe Company.

and dividends paid—Continued.

Capitalization—Continued.				Dividends paid during census year.				
Amounts issued.								
Bonds.	Stock.			Rate.		Total.	On preferred stock.	On common stock.
	Total.	Preferred.	Common.	On preferred.	On common.			
$42,461,217	$130,006,500	$48,115,500	$81,891,000	.....	.....	.....	.....	.....
2,284,000	3,775,600	.....	3,775,600	.....	None ..	.....	.....	.....
657,000	6,000,000	.....	6,000,000	.....	3 p. c...	$180,000	.....	$180,000
17,000,000	20,949,900	10,958,800	9,991,100	None .	None ..	.....	.....	.....
[b] 13,102,117	39,849,500	22,406,700	17,442,800	6 p. c..	None ..	1,344,402	$1,344,402	.....
7,418,100	27,931,500	.....	27,931,500	.....	None ..	.....	.....	.....
.....	27,000,000	11,000,000	16,000,000	7 p. c..	None ..	770,000	770,000	.....
2,000,000	4,500,000	3,750,000	750,000	7 p. c..	None ..	262,500	262,500	.....
5,567,500	63,896,858	12,532,550	51,364,308	.....	.....	.....	.....	.....
.....	499,550	.....	499,550	.....	32½ p. c.	162,353	.....	162,353
1,648,500	7,582,700	.....	7,582,700	.....	None ..	.....	.....	.....
.....	16,315,808	4,000,000	12,315,808	7 p. c..	None ..	103,067	103,067	.....
1,500,000	2,100,000	600,000	1,500,000	6 p. c..	None ..	18,000	18,000	.....
.....	7,901,000	3,550,500	4,350,500	None .	None ..	.....	.....	.....
.....	4,502,500	1,502,500	3,000,000	4 p. c..	None ..	60,100	60,100	.....
.....	1,846,250	200,000	1,646,250	7 p. c..	4 p. c...	78,780	14,000	64,780
.....	1,089,550	589,550	500,000	7 p. c..	None ..	29,277	29,277	.....
2,000,000	2,317,900	.....	2,317,900	None .	None ..	.....	.....	.....
10,000	10,000,000	150,000	9,850,000	12 p. c.	6 p. c...	609,000	18,000	591,000
13,000	103,500	.....	103,500	.....	6 p. c...	6,210	.....	6,210
.....	3,000,000	1,250,000	1,750,000	None .	None ..	.....	.....	.....
.....	240,000	.....	240,000	.....	None ..	.....	.....	.....
.....	4,148,100	690,000	3,458,100	None	None ..	.....	.....	.....
496,000	2,250,000	.....	2,250,000	.....	None ..	.....	.....	.....
275,000	39,534,400	10,027,800	29,506,600	.....	.....	.....	.....	.....
.....	8,856,100	3,977,800	4,878,300	None .	None ..	.....	.....	.....
.....	1,500,000	.....	1,500,000	.....	6 p. c...	90,000	.....	90,000
.....	14,750,000	.....	14,750,000	.....	10 p. c..	1,475,000	.....	1,475,000
.....	6,000,000	4,000,000	2,000,000	8 p. c..	None ..	320,000	320,000	.....
.....	4,177,300	.....	4,177,300	.....	5 p. c...	208,820	.....	208,820
.....	500,000	500,000	.....	None .	.....	.....	.....	.....
275,000	1,651,000	650,000	1,001,000	7 p. c..	None ..	34,125	34,125	.....
.....	2,100,000	900,000	1,200,000	None .	None ..	.....	.....	.....
332,000	238,367,700	99,394,600	138,973,100	.....	.....	.....	.....	.....
.....	1,800,000	1,000,000	800,000	8 p. c..	None ..	80,000	80,000	.....
.....	2,455,200	.....	2,455,200	.....	7 p. c...	171,814	.....	171,814
.....	35,249,100	12,327,200	22,921,900	6 p. c..	4 p. c...	1,246,001	558,120	687,881
.....	15,500,000	7,900,000	7,600,000	7 p. c..	None ..	553,000	553,000	.....
.....	3,750,000	{1st 1,250,000 / 2d 1,250,000}	1,250,000	{3 p. c. on 1st preferred}	None ..	37,500	37,500	.....
.....	2,673,000	1,267,200	1,405,800	3½ p. c.	None ..	44,352	44,352	.....
.....	430,000	215,000	215,000	3½ p. c.	None ..	7,525	7,525	.....
.....	4,000,000	2,000,000	2,000,000	6 p. c..	4 p. c...	200,000	120,000	80,000
.....	16,000,000	.....	16,000,000	.....	None ..	.....	.....	.....
.....	6,744,600	1,745,000	4,999,600	None .	None ..	.....	.....	.....
.....	4,800,000	2,400,000	2,400,000	7 p. c..	10 p. c..	369,000	152,000	217,000
.....	10,000,000	4,500,000	5,500,000	7 p. c..	None ..	315,000	315,000	.....
.....	64,000,000	32,000,000	32,000,000	7 p. c..	None ..	1,680,000	1,680,000	.....
.....	22,765,200	7,624,400	15,140,800	7 p. c..	None ..	607,624	607,624	.....
.....	47,191,500	23,525,500	23,666,000	8 p. c..	3 p. c...	2,592,020	1,882,040	709,980
332,000	1,009,100	390,300	618,800	12 p. c.	None ..	46,876	46,876	.....

[a] Latest reorganization.
[b] Acquired by the American Pipe Company.
[c] The number of plants reported in this table does not agree with the number reported in Tables 1 and 2, because in a number of instances combinations operate plants engaged in different industries. In preparing this list the name of the combination has been placed in the group of industries to which it would be assigned according to its product of chief value. The number also indicates 174 plants reported as idle during the census year.
[d] Merged with the American Ice Company.

APPENDIX VII.

PROPOSED AMENDMENTS TO "ANTI-TRUST ACT" OF 1890.

A BILL INTRODUCED IN THE FIFTY-SIXTH CONGRESS BY MR. LITTLEFIELD, AND SUBMITTED BY MR. THOS. W. PHILLIPS IN CONNECTION WITH HIS SUPPLEMENTED STATEMENT ON INDUSTRIAL COMBINATIONS (p. 662).

[Fifty-sixth Congress, first session. H. R. 10639.—In the Senate of the United States. June 4, 1900. Read the first time.]

AN ACT to amend an act entitled "An act to protect trade and commerce against unlawful restraints and monopolies," approved July second, eighteen hundred and ninety.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

SECTION 1. That the act approved July second, eighteen hundred and ninety, entitled "An act to protect trade and commerce against unlawful restraints and monopolies," be, and same hereby is, amended as follows:

Section one of said act is hereby amended so as to read as follows:

"Section 1. Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is hereby declared to be illegal. Every person who shall make any such contract or engage in any such combination or conspiracy shall be deemed guilty of a crime, and, on conviction thereof, shall be punished by a fine of not less than five hundred dollars and not exceeding five thousand dollars, and by imprisonment not less than six months and not exceeding two years."

SEC. 2. Section two of said act is hereby amended to read as follows:

"Sec. 2. Every person who shall monopolize, or attempt to monopolize or combine or conspire with any person or persons to monopolize, any part of the trade or commerce among the several States or with foreign nations shall be deemed guilty of a crime, and, on conviction thereof, shall be punished by a fine not less than five hundred dollars and not exceeding five thousand dollars, and by imprisonment not less than six months and not exceeding two years."

SEC. 3. Section three of said act is hereby amended so as to read as follows:

"Sec. 3. Every contract, combination in form of trust or otherwise, or conspiracy, in restraint of trade or commerce in any Territory of the United States or of the District of Columbia, or in restraint of trade or commerce between any such Territory and another, or between any such Territory or Territories and any State or States or the District of Columbia, or with foreign nations, or between the District of Columbia and any State or States or foreign nations, is hereby declared illegal. Every person who shall make any such contract or engage in any such combination or conspiracy shall be deemed guilty of a crime, and, on conviction thereof, shall be punished by a fine not less than five hundred dollars and not exceeding five thousand dollars, and by imprisonment not less than six months and not exceeding two years."

SEC. 4. Section seven of said act is hereby amended so as to read as follows:

"Sec. 7. Any person who shall be injured in his business or property by any person or corporation by reason of anything forbidden or declared to be unlawful by this act may sue therefor in any circuit court of the United States in the district in

which the defendant resides or is found, without respect to the amount in controversy, and shall recover threefold the damages by him sustained, provided the minimum sum recovered shall not be less in any case than two hundred and fifty dollars, and the cost of suit, including a reasonable attorney's fee."

SEC. 5. Section eight of said act is hereby amended so as to read as follows:

"Sec. 8. That the word 'person' or 'persons,' wherever used in this act, shall be deemed to include corporations and associations existing under or authorized by the laws of either the United States, the laws of the Territories, the laws of any State, or the laws of any foreign country, and the agents, officers, and attorneys of said corporations and associations."

SEC. 6. That said act is also hereby further amended by adding thereto the following new sections, which shall constitute sections nine, ten, eleven, twelve, and thirteen of said act approved July second, eighteen hundred and ninety, namely:

"Sec. 9. That every corporation, association, joint stock company, or partnership doing business in any State of the United States, or in any Territory belonging thereto, or in the District of Columbia, producing, manufacturing, or dealing in any article of commerce, when organized, formed, managed, or carrying on business for the purpose of controlling or monopolizing the manufacture, production, or sale of any such article of commerce, or for the purpose of increasing or decreasing the cost of such article of commerce to the user or consumer thereof, for the purpose of preventing competition in the manufacture, production, or sale thereof, is, for the purposes of this act, hereby declared to be illegal, and may be proceeded against at the suit of any person or persons or corporation or association, or by and in behalf of the United States, and perpetually enjoined and restrained from doing or carrying on any interstate or foreign commerce whatever, either with the States or the Territories of the United States or the District of Columbia, or any foreign country, and, if adjudged illegal within the meaning of this act, it and its officers and the members of such association, joint stock company, or partnership shall be, and hereby are, forbidden and prohibited the use of the mails of the United States in aid or furtherance of any such business or purposes; and no article of commerce produced, or manufactured, or owned and dealt in by any such corporation, association, joint stock company, or partnership so organized, formed, managed, or carrying on business shall be transported or carried without the State or Territory in which produced or manufactured, or in which same may be, or without the District of Columbia if produced, manufactured, or found therein by any individual, corporation, or common carrier in any manner whatever. All such articles of commerce shipped in violation of the provisions of this act shall be forfeited to the United States, and may be seized by any marshal or deputy marshal of the United States, or by any person duly authorized by law to make such seizure, and when so seized shall be condemned by like proceedings as those provided by law for the forfeiture, seizure, and condemnation of property imported into the United States contrary to law: *Provided, however*, That such articles of commerce may be so carried or transported for the use of the consignor or consignee.

"Sec. 10. That any common carrier or transportation company which shall knowingly transport any property described in sections six or nine of this act from one State to another, from a State or a Territory to a Territory, or to the District of Columbia, or to a foreign country, or from the District of Columbia to a State or to a Territory, or to any foreign country, shall be subject to a penalty of not less than five hundred dollars nor more than five thousand dollars, to be recovered by the United States in an action brought in any court of the United States having jurisdiction thereof, and which suit may be brought in any district in which such corporation, association, joint stock company, common carrier, or transportation company mentioned in this act has an office or conducts business; and any person or any officer, agent, manager, or attorney of any such corporation, association, joint stock company,

common carrier, or transportation company who shall knowingly receive for transportation or transport, or aid in transporting any property described in sections six or nine of this act from one State to another, or from a State or a Territory to a Territory, or to the District of Columbia, or to a foreign country, or from the District of Columbia to a State or to a Territory, shall be deemed guilty of a misdemeanor, and, on conviction, shall be punished by a fine of not less than five hundred dollars nor more than five thousand dollars, and by imprisonment not less than thirty days nor more than six months.

"Sec. 11. That in all prosecutions, hearings, and proceedings under the provisions of this act, whether civil or criminal, no person shall be excused from attending and testifying, or from producing books, papers, contracts, agreements, and documents before the courts of the United States or the commissioners thereof, or in obedience to the subpœna of said courts or commissioners, on the ground or for the reason that the testimony or evidence, documentary or otherwise, required of him may tend to criminate him or subject him to a penalty or forfeiture; but no person shall be prosecuted or subjected to any penalty or forfeiture for or on account of any transaction, matter, or thing concerning which he may testify, or produce evidence, documentary or otherwise, before said courts or commissioners, or in obedience to its subpœna or the subpœna of either of them, or in any such case or proceeding.

"Sec. 12. That the several districts and circuit courts of the United States and the courts of the District of Columbia and of the several Territories of the United States are hereby vested with and given jurisdiction, within their respective jurisdictions as now prescribed by law, of all actions and proceedings, both civil and criminal, in law and in equity, necessary for the enforcement of this act; and it shall be the duty of the Attorney-General of the United States and of the several district attorneys of the United States within their respective districts to cause all persons, corporations, or associations violating or failing to comply with any of the provisions of this act to be promptly prosecuted therefor, and to enforce all of the penalties imposed by this act.

"Sec. 13. That any civil or criminal proceeding or prosecution authorized under this act in the name or in behalf of the United States, or otherwise, may be begun and prosecuted by any person, firm, corporation, or association, or by any officer of the United States, in the name of and on behalf of the United States."

SEC. 7. That nothing in this act shall be construed as to apply to trade unions or other labor organizations, organized for the purpose of regulating wages, hours of labor, or other conditions under which labor is to be performed. This act shall take and be in effect from and after June thirtieth, nineteen hundred.

Passed the House of Representatives, June 2, 1900.

Attest: A. McDOWELL, *Clerk.*

APPENDIX VIII.

THE BRITISH FACTORY AND WORKSHOP ACT, 1901.

The following summary of the British factory and workshop act, 1901, from the Labour Gazette of September, 1901, shows the scope of the British legislation on this subject:

This act amends and consolidates the existing law with regard to factories and workshops. It comes into force on the 1st of January next.

The amendments introduced into the existing law are numerous and important. One of the most important is that which substitutes for the existing mode of establishing special rules for dangerous industries an entirely new procedure. The chief defects in the present procedure are that the rules have to be established for each factory and workshop separately, with the result that different rules may be in force in different places, that each occupier has a separate appeal to arbitration, that the work people have no right to object, and that arbitration has proved to be an unsuitable method for settling rules. The new procedure is designed to meet these defects, while giving to all persons affected the right to object and have their objections heard. Briefly, the new procedure is as follows: When the secretary of state is satisfied that any process, etc., is dangerous, he may draw up draft regulations and publish them for the information of persons affected. Any person, whether occupier or workman, will be entitled to send to the secretary of state in writing his objection to the regulations or any part of them, and in the event of the secretary of state amending the regulations to meet such objections the regulations are to be published over again in the same manner as before. If the secretary of state does not amend the regulations to meet any objections, he shall, before making the regulations, direct an inquiry, and may appoint a competent person to hold the inquiry and to report to him. The inquiry will be held in public, and all persons affected will be entitled to appear. The regulations as finally made are to be laid before Parliament, and if either house resolves within forty days that they ought to be annulled, the regulations will cease to be in force. Regulations may apply to all factories and workshops in which a dangerous process, etc., is used or to any specified class of factory or workshop. They may apply to tenement workshops (i. e., work places in which two or more persons carry on any work which would constistitute the place a workshop if the persons were in the employment of the owner or occupier), which are at present outside the scope of special rules, and impose duties on the owners and on occupiers who do not employ any persons. They may prohibit or limit the employment of persons and prohibit or control the use of any material or process.

Other important provisions with regard to health and safety are as follows:

HEALTH.

1. Sufficient means of ventilation are to be provided in every room in a factory or workshop, and the secretary of state may prescribe standards of ventilation for any class of factories or workshops. Provision is made for the owner of the factory, in cases where a court of summary jurisdiction considers it reasonable, bearing the whole or part of the expense of providing the means of ventilation required instead of the occupier.

2. Where the floors are liable to be so wet that the wet is capable of being drained off, adequate means are to be provided for so draining it.

3. Power is given to the secretary of state to increase the amount of cubic space required for each worker in cases where the work place (not being a domestic workshop) is used by night as a sleeping apartment.

4. Increased power is given to the secretary of state to take action in case of default on the part of a district council either under the factory act or under the law relating to public health.

5. The provision of thermometers may be required in any class of factories or workshops.

6. The secretary of state is empowered to prescribe standards for the sanitary accommodation to be provided under the act in factories and workshops.

7. In rooms where poisonous substances are used so as to give rise to dust or fumes, meals are not to be taken, and suitable meal accommodation is to be provided elsewhere.

SAFETY.

1. Special provision is for the first time made with regard to the safety of steam boilers. The act requires that every steam boiler in a factory or workshop, or in any place to which any provisions of the act apply, must be provided with a proper safety valve and proper steam and water gauges, and must be thoroughly examined by a competent person once in every fourteen months.

2. Children are prohibited from cleaning any place under any machinery other than overhead mill gearing.

3. New powers are given to district councils to make by-laws in regard to means of escape from fire, and the existing provisions in regard to fire are otherwise strengthened.

4. The power already existing for a court of summary jurisdiction to make an order with regard to dangerous machines is extended to any part of the ways, works, machinery, or plant used in a factory or workshop, including a steam boiler.

EMPLOYMENT.

In regard to employment the chief alterations are—

1. The Saturday period of employment in textile factories is reduced by one hour.

2. In cases where a woman or young person is employed on the same day by the same employer both in a factory or workshop and in a shop, the occupier will be required, if the woman or young person is employed in the shop outside the period of employment fixed for the factory or workshop, to keep a register of the particulars of such employment.

3. Overtime in places where perishable articles are dealt with has been reduced from sixty to fifty days in the year and from five to three days in the week.

4. The employment of children under 12 years of age in a factory or workshop is prohibited throughout the whole country.

HOME WORK.

Important alterations have been made in the law with regard to home work. Copies of the lists of outworkers, which the occupiers in certain industries are required to keep, are to be sent to district councils. The existing but ineffective provision with regard to the employment of persons in unwholesome premises has been amended by giving the district council power in any case in which the outworker is employed in a place dangerous to his health to give notice to the occupier giving out the work that the place is dangerous, and prohibiting the occupier after

uch notice from continuing to give out work to be done in that place. (This pro-ision applies only in the case of such classes of work as may be specified by the ecretary of state.)

The existing provisions with regard to home work in places where there is infectious lisease are strengthened by a clause which empowers the district council to serve on an occupier or contractor an order forbidding any work to be given out to any person iving or working in any house mentioned in the order where there is infectious lisease. (This provision applies only with regard to work in connection with the making, cleaning, etc., of wearing apparel, and any other class of work specified by order of the secretary of state.)

Again, it is provided that where dangerous processes are carried on in domestic factories or workshops all the provisions of the act are to apply as though the place were a factory or workshop. The secretary of state is to give notice of the provisions of the act relating to domestic factories and workshops in such manner as he thinks fit.

Lastly, power is given to the secretary of state to extend the provisions of the particular section to outworkers.

EMERGENCY PROCESSES.

The existing exemption from the provisions of the factory acts in regard to emergency processes, which is enjoyed by places in which fish or fruit preserving is carried on, has been limited to an exemption in respect of the period of employment, time for meals, and holidays only, and in the case of fruit preserving the exemption is to be subject to such conditions as the secretary of state may prescribe. In all other respects those processes are brought within the general provisions of the act. In the case of creameries, power is given to the secretary of state to meet the particular circumstances of the industry by varying the beginning and end of the daily period of employment and the meal hours, and by allowing employment for not more than three hours on Sunday, provided that the daily or weekly maximum number of hours is not exceeded.

TENEMENT FACTORIES AND WORKSHOPS.

The existing provisions as to tenement factories, which place certain duties on the owner, are now extended to cases (previously excepted) of occupiers paying a rent of over £200 a year, and the provisions have been otherwise amended. Tenement workshops are brought under certain provisions of the act.

SPECIAL CLASSES OF ESTABLISHMENTS.

Bakehouses.—The use of underground bakehouses will after January 1, 1904, be prohibited, unless the bakehouse is certified by the district council to be suitable in regard to construction, light, ventilation, and all other respects. In the event of the district council refusing a certificate, an appeal will lie to a court of summary jurisdiction. Difficulties having arisen under the existing law as to what was meant by an underground bakehouse, the act now provides a definition.

Cotton-cloth and other humid factories.—The law as to these factories has been amended in several respects. Power is given to the secretary of state to modify the provisions as to ventilation contained in the order (now embodied in the act) made under the act of 1897. In the case of tenement factories used for the weaving of cotton cloth, the owner may, if the secretary of state directs, be substituted for the occupier for the purpose of the requirements as to ventilation. The application of the acts to other humid factories has been modified in several respects.

Docks.—The existing provisions with regard to docks, which did not apply to loading from or unloading on to lighters, etc., in a dock or river, is extended, and the

act is made to apply to all machinery or plant used in the process of loading or unloading or coaling any ship in any dock, harbor, or canal. Plant is to include gangways or ladders.

Railways.—Certain provisions are for the first time applied to lines or sidings used in connection with a factory or workshop or with any place to which any provisions of the act are applied which are not parts of a railway within the meaning of the railway employment (prevention of accidents) act, 1900.

MISCELLANEOUS.

Other important provisions are as follows: (1) One general register is to be kept in every factory and workshop, in which the occupier is to enter, in addition to matters already required under the existing acts, all special exceptions of which he avails himself, and any other matters prescribed by the secretary of state. (2) The district council is to keep a register of all workshops in its district, and the medical officer of health is to make a yearly report on the administration of the act in workshops and work places. (3) The return of persons employed in factories and workshops is to be furnished at such intervals (not less than one nor more than three years) as the secretary of state may direct; and a similar return may be required from the occupier of any place to which any of the provisions of the act apply. (4) A person engaged in, or being an officer of any association of persons engaged in the same trade or occupation as a person charged with any offense under this act is prohibited from acting as justice in hearing and determining the charge. (5) The approval of the chief inspector is made necessary before a part of a factory or workshop can be treated by the occupier as a separate factory or workshop. (6) The doubt as to the application of the existing acts to electrical works is removed by including in the definition of nontextile factories any premises in which electrical energy is generated or transformed for the purpose of supply by way of trade, or for the lighting of any street, public place, or public building, or of any hotel, or of any railway, mine, or other industrial undertaking. Dry-cleaning, carpet-beating, and bottle-washing works are also expressly included within the act.

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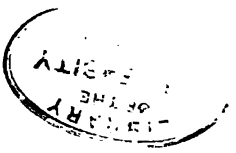

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